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ORAL EXERCISES  
*in* NUMBER  
*By Anna L. Rice*

UC-NRLF

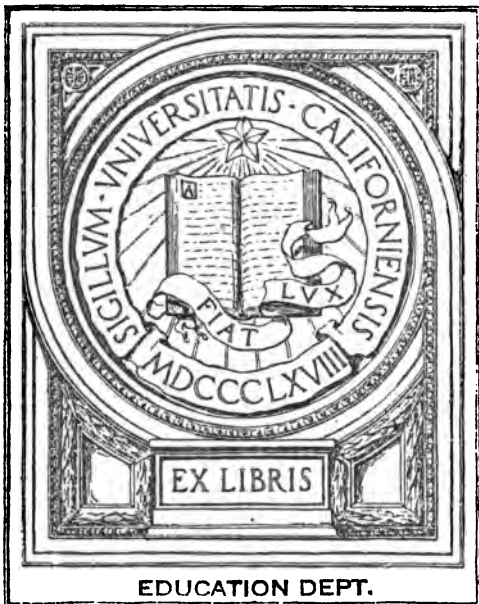


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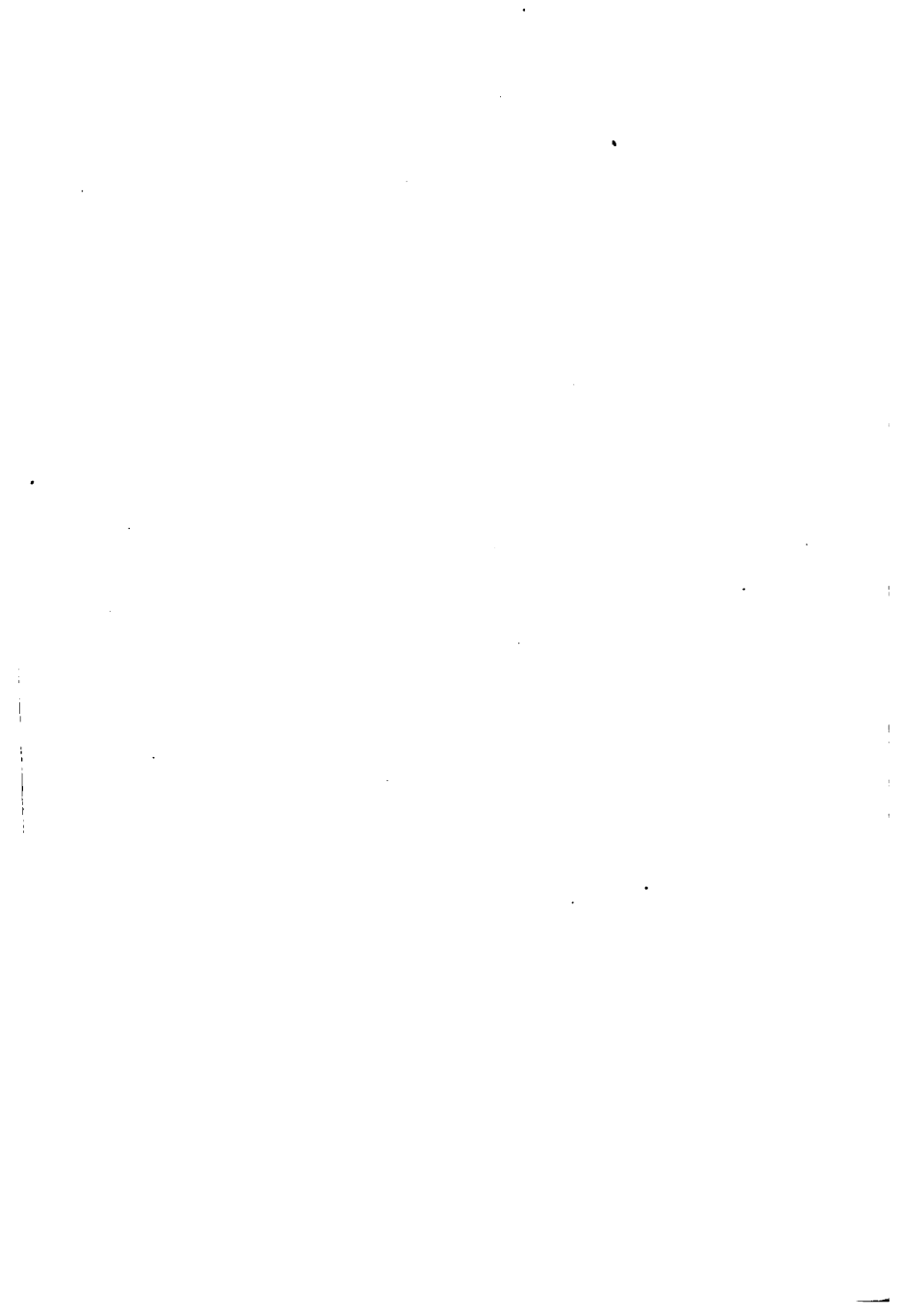
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# ORAL EXERCISES IN NUMBER

FOR USE IN GRADES FOUR TO EIGHT INCLUSIVE

BY

ANNA L. RICE

PRINCIPAL OF LINCOLN SCHOOL, SPRINGFIELD  
MASSACHUSETTS

AUTHOR OF "OUTLINES IN DICTIONARY  
STUDY "



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## PREFACE

THOUGH educators differ as to just how much knowledge of arithmetic is essential to a common-school education, the necessity of teaching certain fundamental facts of number is unquestioned. Children must be taught to add, subtract, multiply, and divide, whole numbers. They must understand common fractions, and be able to perform the same operations with these as with whole numbers. Some knowledge of decimals is necessary, in order that they may be able to use United States money. They must be acquainted with the common facts of denominate numbers, and know the elements of percentage.

This elementary knowledge of number is essential not only to a common-school education, but as a foundation for all advanced work in mathematics. If this foundation is weak, the work built upon it will be weak; for it is clear that no problem can be correctly solved if the simple operations which it involves are incorrectly performed. Nor should we be satisfied with accuracy alone. The facts of number are not in any true sense learned until they can be quickly, as well as accurately, recalled.

If the teaching of the fundamental facts of number is to be effective — if these simple number combinations, which are the very alphabet of all mathematical work, are to be **mastered** — systematic training must be given. No royal road to the accomplishment of this end has yet been found. Mastery of these tools of the mind, like the mastery of a musical instrument, comes through long-continued practice only. In other words, drill is indispensable.

Drill in arithmetic, to be effective, must be **regular**. A few minutes daily should be devoted to it in each grade. It must be



**thorough**; that is, the facts need to be presented over and over again. The method of presenting these facts must also be **varied** from day to day, in order to maintain interest.

To provide for this daily drill, an abundance of material is necessary. The textbook in arithmetic, however excellent it may be, cannot fully supply this need.

**Oral Exercises in Number** is intended to supplement any basal textbook in arithmetic, and is adapted for use from the fourth grade to the high school. It is not assumed that the book will be used for more than ten minutes daily in any grade. This daily period of drill, *if begun in the fourth grade*, should enable pupils to master the essential facts of number by the time they reach the seventh or the eighth grade. It is not necessary to lengthen the arithmetic period to allow for this work, for pupils will soon be able to do their written arithmetic more rapidly as the result of this daily oral drill. As they gain in accuracy and speed, and the time now so unprofitably spent in looking for and correcting mistakes is gradually eliminated, less time will be required to teach the topics of the higher grades, and children will take greater interest and pleasure in their work. For every one enjoys doing the things he can do well, while failure is discouraging to us all.

As indicated by the spacing the exercises on most of the pages are **graded**, the first group of exercises on each page being the simplest. It is not possible, however, to say definitely what exercises should be used in a given grade. This must be determined by the ability of the children, and by what has already been mastered. In using these graded pages, teachers should be guided by the following rule:

“**Master the first group of exercises** on any page before taking the second, and **master the second group** before taking the third.”

The **ungraded** pages are of about equal difficulty throughout, and require no explanation.

It is expected that teachers will use the exercises suited to their grades not simply once or twice, but many times. The same exercise should not, however, be used on two or more consecutive days. This would mean loss of interest, and possible memorizing of answers. Since one exercise affords as good mental drill as another, the power gained by spending ten minutes on any exercise will help pupils to master any other. After going through an exercise once or twice leave it for a different one, coming back to it from time to time until children have no further need of it.

A study of the mistakes made by children in their arithmetical work shows that some number facts are remembered with greater difficulty than others. The most troublesome combinations occur most frequently on the pages of this book.

Since variety is as important a factor in effective drill as repetition, the same old number facts are dressed in new costumes and introduced under different headings, such as "United States Money," "Denominate Numbers," "Percentage," etc. An important by-product of this method of drill will be the familiarity thus acquired by pupils with the elements of these subjects.

While the object of these exercises is to develop both accuracy and speed, teachers should never lose sight of the fact that children are to be trained to **accuracy first**. Do not confuse them by trying to secure speed and accuracy at the same time. An exercise should be well learned before children are timed in reciting it.

Much interest can be aroused in number-drills, and the value of these drills will be in proportion to the interest and enthusiasm of the class. An appeal to the play instinct meets with instant response from children, who love to compete with each other in doing mental, as well as physical, stunts. Teachers will find these exercises well adapted for group work, and class drills should be supplemented by much work of this kind. A few suggestions for making the drills interesting will be found on another page.

The author gratefully acknowledges her indebtedness to Dr. James H. Van Sickle, Superintendent of Schools, Springfield, Massachusetts; to Dr. G. M. Wilson, Professor of Education, Iowa State College; and to Miss Sarah J. Lee, formerly teacher of mathematics in the High School, Riverside, California, for their courtesy in reviewing this text and for their many helpful criticisms and suggestions.

A. L. R.

# HOW NUMBER-DRILLS MAY BE MADE INTERESTING

## HINTS TO TEACHERS

The purpose of this book, as stated in the preface, is to supply teachers in elementary and junior high schools with material for oral drill in the fundamental facts of number. Since the value of this drill will depend largely upon the way in which the book is used, it is hoped that teachers will first of all read the preface, in order to acquaint themselves with the principles upon which the book is based, the arrangement of material, and the manner in which the exercises are intended to be used.

It is suggested that teachers supplement class drill by much group work. This method of study is particularly interesting and effective when used as a means of preparation for the one-minute exercises and speed tests suggested further on. As a rule, only exercises which have been studied in class should be assigned for group work, and the leader of each group should be a pupil who has accurately recited the exercise chosen for study. Any member of the group may, however, question the correctness of an answer accepted by the leader, and the group as a whole must be convinced that the answer finally accepted is right.

The value of group work depends upon the keen participation of each member of the group in the work being done, and each pupil should feel a sense of personal responsibility for noticing errors. Considerable freedom is therefore necessary, but no disorder. It is quite possible for several groups to work at the same time without disturbing one another or the teacher in the least. It will add to the independence of pupils if they learn where to find, in their textbook in arithmetic, the multiplication

tables and the tables of denominate numbers, and form the habit of referring to these tables whenever in doubt about the facts which are to be found stated in them.

On pages 84 and 124 will be found a few suggestions for one-minute exercises and speed tests, indicating ways in which almost any exercise may be used after it has been sufficiently practiced.

Pupils should frequently be allowed to choose the exercise for study. A few minutes' drill on this exercise will show each member of the class where his own weakness lies, and after a period of study — preferably in groups — individuals may be timed in reciting either the whole exercise or some part of it. Or, a row of pupils, each in turn answering one question, may compete with another row reciting in the same manner.

Another suggestion is that a boy be chosen by the boys and a girl by the girls to compete with each other, answering questions alternately from a given exercise. If the boy makes a mistake the girls win, and *vice versa*. If neither one makes a mistake, it is a tie. Another boy and girl are then chosen, and the game proceeds as before.

Still another suggestion is that a game like the old-fashioned spelling match be made of these exercises, the pupils being evenly divided on "sides." The teacher should choose simple exercises for this game, and should put the questions herself.

As teachers become familiar with the contents of this book, they will develop methods of drill better suited, perhaps, to the needs of their classes than any here suggested. The important fact to keep in mind is that the only good drill is a lively one. The success of any drill is measured by the degree of interest aroused.

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# WHOLE NUMBERS ADDITION

1. 1 and 2	2. 4 + 3	3. 3 and 4	4. 6 + 5
5 and 2	7 + 3	5 and 4	2 + 5
4 and 2	3 + 3	1 and 4	1 + 5
7 and 2	8 + 3	0 and 4	7 + 5
3 and 2	9 + 3	6 and 4	8 + 5
9 and 2	0 + 3	8 and 4	3 + 5
8 and 2	2 + 3	2 and 4	9 + 5
2 and 2	6 + 3	9 and 4	0 + 5
6 and 2	1 + 3	4 and 4	4 + 5
0 and 2	5 + 3	7 and 4	5 + 5

---

5. 10 + 4	6. 20 + 2	7. 30 + 5	8. 40 + 3
11 + 3	21 + 5	31 + 2	41 + 4
12 + 3	22 + 2	32 + 4	42 + 5
13 + 4	23 + 3	33 + 2	43 + 5
14 + 2	24 + 5	34 + 3	44 + 4
15 + 5	25 + 2	35 + 4	45 + 3
16 + 2	26 + 3	36 + 5	46 + 4
17 + 5	27 + 4	37 + 3	47 + 2
18 + 3	28 + 5	38 + 2	48 + 4
19 + 4	29 + 3	39 + 5	49 + 2

---

Add:

9. 5	6	4	3	6	10. 7	3	8	6	2
4	6	8	9	0	5	6	8	7	5
9	2	7	7	8	2	9	4	8	9
11. 3	9	6	3	5	12. 3	2	7	6	9
7	5	4	7	0	9	2	3	7	0
6	8	9	7	8	9	7	3	8	7
13. 1	3	2	1	2	14. 6	5	8	4	7
2	0	4	5	8	6	7	5	4	7
8	9	5	9	6	6	5	8	4	7





# WHOLE NUMBERS ADDITION

3

$$\begin{array}{r} 1. \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \\ \quad 6 \quad 5 \quad 4 \quad 5 \quad 8 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \\ \quad 4 \quad 9 \quad 6 \quad 9 \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \\ \quad 7 \quad 6 \quad 5 \quad 2 \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \\ \quad 8 \quad 7 \quad 8 \quad 4 \quad 1 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 8 \quad 9 \quad 3 \quad 4 \quad 5 \\ \quad 2 \quad 1 \quad 7 \quad 6 \quad 5 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 3 \quad 7 \quad 4 \quad 5 \quad 5 \\ \quad 3 \quad 2 \quad 4 \quad 3 \quad 4 \\ \quad 4 \quad 1 \quad 2 \quad 2 \quad 1 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 7 \quad 3 \quad 4 \quad 8 \quad 6 \\ \quad 5 \quad 1 \quad 2 \quad 7 \quad 6 \\ \quad 2 \quad 9 \quad 6 \quad 3 \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 7 \quad 9 \quad 3 \quad 4 \quad 8 \\ \quad 8 \quad 2 \quad 4 \quad 7 \quad 8 \\ \quad 6 \quad 5 \quad 6 \quad 5 \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 2 \quad 5 \quad 6 \quad 5 \quad 3 \\ \quad 8 \quad 9 \quad 0 \quad 1 \quad 3 \\ \quad 3 \quad 7 \quad 4 \quad 7 \quad 2 \\ \quad 1 \quad 2 \quad 8 \quad 7 \quad 8 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 5 \quad 7 \quad 8 \quad 4 \quad 2 \\ \quad 8 \quad 9 \quad 6 \quad 6 \quad 2 \\ \quad 7 \quad 5 \quad 1 \quad 3 \quad 8 \\ \quad 6 \quad 3 \quad 9 \quad 7 \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 6 \quad 7 \quad 8 \quad 9 \quad 0 \\ \quad 5 \quad 9 \quad 9 \quad 2 \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 6 \quad 7 \quad 8 \quad 9 \quad 6 \\ \quad 7 \quad 6 \quad 4 \quad 4 \quad 6 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 6 \quad 7 \quad 8 \quad 9 \quad 0 \\ \quad 8 \quad 7 \quad 8 \quad 3 \quad 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 6 \quad 7 \quad 8 \quad 9 \quad 7 \\ \quad 9 \quad 4 \quad 7 \quad 9 \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 7 \quad 2 \quad 5 \quad 1 \quad 6 \\ \quad 3 \quad 8 \quad 5 \quad 9 \quad 4 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 4 \quad 2 \quad 1 \quad 9 \quad 3 \\ \quad 0 \quad 2 \quad 8 \quad 0 \quad 6 \\ \quad 6 \quad 6 \quad 1 \quad 1 \quad 1 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 3 \quad 9 \quad 8 \quad 9 \quad 4 \\ \quad 5 \quad 4 \quad 5 \quad 6 \quad 9 \\ \quad 3 \quad 4 \quad 7 \quad 3 \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 5 \quad 8 \quad 7 \quad 6 \quad 4 \\ \quad 4 \quad 2 \quad 3 \quad 8 \quad 5 \\ \quad 5 \quad 3 \quad 5 \quad 6 \quad 8 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 6 \quad 2 \quad 4 \quad 6 \quad 1 \\ \quad 8 \quad 9 \quad 8 \quad 3 \quad 8 \\ \quad 4 \quad 1 \quad 5 \quad 2 \quad 4 \\ \quad 9 \quad 7 \quad 5 \quad 4 \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 6 \quad 5 \quad 3 \quad 7 \quad 3 \\ \quad 4 \quad 0 \quad 8 \quad 7 \quad 9 \\ \quad 3 \quad 5 \quad 3 \quad 2 \quad 6 \\ \quad 3 \quad 9 \quad 7 \quad 4 \quad 5 \\ \hline \end{array}$$

1.  $1 + 6$

$2 + 5$

$3 + 4$

$4 + 6$

$5 + 8$

$6 + 4$

$7 + 9$

$8 + 6$

$9 + 2$

$0 + 7$

2.  $1 + 4$

$2 + 8$

$3 + 6$

$4 + 9$

$5 + 2$

$6 + 7$

$7 + 3$

$8 + 4$

$9 + 5$

$0 + 0$

3.  $1 + 7$

$2 + 6$

$3 + 5$

$4 + 8$

$5 + 3$

$6 + 8$

$7 + 2$

$8 + 5$

$9 + 4$

$0 + 9$

4.  $1 + 9$

$2 + 7$

$3 + 8$

$4 + 4$

$5 + 5$

$6 + 9$

$7 + 4$

$8 + 7$

$9 + 9$

$0 + 2$

Add:

$$\begin{array}{r} 5. \quad 13 \quad 24 \quad 49 \quad 27 \\ \quad \quad 5 \quad \quad 6 \quad \quad 8 \quad \quad 6 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 65 \quad 34 \quad 19 \quad 51 \\ \quad \quad 8 \quad \quad 5 \quad \quad 6 \quad \quad 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 33 \quad 42 \quad 87 \quad 91 \\ \quad \quad 8 \quad \quad 8 \quad \quad 5 \quad \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 12 \quad 39 \quad 73 \quad 44 \\ \quad \quad 2 \quad \quad 5 \quad \quad 8 \quad \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 77 \quad 66 \quad 55 \quad 13 \\ \quad \quad 7 \quad \quad 6 \quad \quad 8 \quad \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 75 \quad 69 \quad 25 \quad 48 \\ \quad \quad 4 \quad \quad 8 \quad \quad 6 \quad \quad 4 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 5 \quad 3 \quad 8 \quad 6 \quad 4 \\ \quad \quad 6 \quad 7 \quad 0 \quad 3 \quad 1 \\ \quad \quad 0 \quad 2 \quad 8 \quad 7 \quad 3 \\ \quad \quad 4 \quad 9 \quad 4 \quad 2 \quad 8 \\ \quad \quad 5 \quad 1 \quad 3 \quad 5 \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 3 \quad 4 \quad 7 \quad 8 \quad 6 \\ \quad \quad 9 \quad 0 \quad 8 \quad 3 \quad 6 \\ \quad \quad 8 \quad 6 \quad 1 \quad 5 \quad 2 \\ \quad \quad 2 \quad 6 \quad 9 \quad 0 \quad 2 \\ \quad \quad 2 \quad 3 \quad 2 \quad 9 \quad 5 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 6 \quad 2 \quad 6 \quad 5 \quad 3 \\ \quad \quad 7 \quad 8 \quad 0 \quad 8 \quad 3 \\ \quad \quad 1 \quad 7 \quad 3 \quad 8 \quad 2 \\ \quad \quad 3 \quad 5 \quad 8 \quad 0 \quad 2 \\ \quad \quad 4 \quad 2 \quad 1 \quad 4 \quad 4 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 7 \quad 3 \quad 2 \quad 1 \quad 9 \\ \quad \quad 8 \quad 4 \quad 4 \quad 3 \quad 0 \\ \quad \quad 0 \quad 5 \quad 6 \quad 5 \quad 8 \\ \quad \quad 3 \quad 6 \quad 0 \quad 7 \quad 2 \\ \quad \quad 7 \quad 7 \quad 8 \quad 1 \quad 4 \\ \hline \end{array}$$

1.  $1 + 5$

$9 + 7$

$4 + 5$

$3 + 7$

$2 + 9$

$5 + 6$

$8 + 3$

$7 + 8$

$4 + 1$

$6 + 6$

2.  $5 + 1$

$2 + 4$

$6 + 5$

$7 + 7$

$8 + 1$

$9 + 8$

$4 + 7$

$3 + 2$

$5 + 7$

$7 + 1$

3.  $8 + 8$

$1 + 8$

$9 + 6$

$7 + 6$

$5 + 9$

$2 + 3$

$4 + 3$

$6 + 2$

$3 + 3$

$8 + 2$

4.  $2 + 3$

$7 + 5$

$9 + 1$

$3 + 9$

$8 + 9$

$6 + 3$

$4 + 2$

$7 + 5$

$5 + 4$

$9 + 3$

Add:

5.  $\begin{array}{r} 24 \\ 12 \\ \hline \end{array}$

$\begin{array}{r} 16 \\ 32 \\ \hline \end{array}$

$\begin{array}{r} 44 \\ 22 \\ \hline \end{array}$

$\begin{array}{r} 57 \\ 30 \\ \hline \end{array}$

6.  $\begin{array}{r} 42 \\ 26 \\ \hline \end{array}$

$\begin{array}{r} 50 \\ 18 \\ \hline \end{array}$

$\begin{array}{r} 29 \\ 10 \\ \hline \end{array}$

$\begin{array}{r} 19 \\ 50 \\ \hline \end{array}$

7.  $\begin{array}{r} 75 \\ 11 \\ \hline \end{array}$

$\begin{array}{r} 38 \\ 40 \\ \hline \end{array}$

$\begin{array}{r} 73 \\ 24 \\ \hline \end{array}$

$\begin{array}{r} 61 \\ 17 \\ \hline \end{array}$

8.  $\begin{array}{r} 15 \\ 31 \\ \hline \end{array}$

$\begin{array}{r} 46 \\ 12 \\ \hline \end{array}$

$\begin{array}{r} 64 \\ 33 \\ \hline \end{array}$

$\begin{array}{r} 70 \\ 25 \\ \hline \end{array}$

9.  $\begin{array}{r} 25 \\ 42 \\ \hline \end{array}$

$\begin{array}{r} 16 \\ 31 \\ \hline \end{array}$

$\begin{array}{r} 80 \\ 19 \\ \hline \end{array}$

$\begin{array}{r} 21 \\ 23 \\ \hline \end{array}$

10.  $\begin{array}{r} 15 \\ 51 \\ \hline \end{array}$

$\begin{array}{r} 35 \\ 42 \\ \hline \end{array}$

$\begin{array}{r} 49 \\ 30 \\ \hline \end{array}$

$\begin{array}{r} 36 \\ 41 \\ \hline \end{array}$

11.  $\begin{array}{r} 7 \\ 1 \\ 4 \\ 3 \\ 5 \\ 6 \\ \hline \end{array}$

$\begin{array}{r} 8 \\ 0 \\ 8 \\ 2 \\ 4 \\ 5 \\ \hline \end{array}$

$\begin{array}{r} 3 \\ 3 \\ 9 \\ 8 \\ 7 \\ 2 \\ \hline \end{array}$

$\begin{array}{r} 6 \\ 4 \\ 3 \\ 9 \\ 0 \\ 7 \\ \hline \end{array}$

$\begin{array}{r} 2 \\ 2 \\ 4 \\ 8 \\ 4 \\ 2 \\ \hline \end{array}$

12.  $\begin{array}{r} 9 \\ 0 \\ 1 \\ 6 \\ 7 \\ 9 \\ \hline \end{array}$

$\begin{array}{r} 7 \\ 7 \\ 4 \\ 2 \\ 0 \\ 8 \\ \hline \end{array}$

$\begin{array}{r} 5 \\ 1 \\ 8 \\ 7 \\ 6 \\ 3 \\ \hline \end{array}$

$\begin{array}{r} 9 \\ 2 \\ 3 \\ 8 \\ 0 \\ 8 \\ \hline \end{array}$

$\begin{array}{r} 6 \\ 6 \\ 5 \\ 2 \\ 5 \\ 1 \\ \hline \end{array}$

13.  $\begin{array}{r} 4 \\ 3 \\ 3 \\ 4 \\ 2 \\ 2 \\ \hline \end{array}$

$\begin{array}{r} 6 \\ 1 \\ 7 \\ 2 \\ 8 \\ 9 \\ \hline \end{array}$

$\begin{array}{r} 5 \\ 6 \\ 4 \\ 5 \\ 2 \\ 3 \\ \hline \end{array}$

$\begin{array}{r} 3 \\ 3 \\ 3 \\ 1 \\ 1 \\ 2 \\ \hline \end{array}$

$\begin{array}{r} 5 \\ 4 \\ 1 \\ 2 \\ 7 \\ 1 \\ \hline \end{array}$

14.  $\begin{array}{r} 8 \\ 3 \\ 7 \\ 6 \\ 5 \\ 7 \\ \hline \end{array}$

$\begin{array}{r} 2 \\ 5 \\ 6 \\ 9 \\ 8 \\ 4 \\ \hline \end{array}$

$\begin{array}{r} 3 \\ 2 \\ 5 \\ 4 \\ 7 \\ 6 \\ \hline \end{array}$

$\begin{array}{r} 9 \\ 8 \\ 7 \\ 6 \\ 5 \\ 4 \\ \hline \end{array}$

$\begin{array}{r} 6 \\ 5 \\ 4 \\ 3 \\ 2 \\ 1 \\ \hline \end{array}$

Add:

1.	9	7	3	8	6	2.	5	8	4	2	9
	<u>8</u>	<u>6</u>	<u>4</u>	<u>2</u>	<u>9</u>		<u>5</u>	<u>6</u>	<u>5</u>	<u>7</u>	<u>5</u>
3.	7	5	6	8	9	4.	9	8	5	6	4
	<u>9</u>	<u>4</u>	<u>6</u>	<u>0</u>	<u>3</u>		<u>9</u>	<u>3</u>	<u>7</u>	<u>9</u>	<u>7</u>
5.	8	7	4	2	5	6.	1	8	5	6	7
	<u>8</u>	<u>7</u>	<u>6</u>	<u>9</u>	<u>8</u>		<u>9</u>	<u>7</u>	<u>0</u>	<u>5</u>	<u>3</u>

7.	13 + 4	8.	62 plus 2	9.	17 + 7	10.	36 + 6
	27 + 9		45 plus 4		19 + 6		22 + 7
	84 + 6		37 plus 3		38 + 5		33 + 8
	55 + 8		89 plus 7		23 + 4		44 + 9
	31 + 5		52 plus 5		14 + 9		55 + 8
	42 + 8		21 plus 9		66 + 8		66 + 7
	26 + 5		93 plus 8		43 + 7		77 + 6
	57 + 7		64 plus 6		29 + 3		88 + 5
	45 + 3		33 plus 5		34 + 5		19 + 4
	78 + 6		88 plus 8		50 + 6		26 + 3

Add:

11.	50	30	60	40	20	12.	70	80	10	90	50
	<u>10</u>	<u>20</u>	<u>80</u>	<u>40</u>	<u>50</u>		<u>10</u>	<u>20</u>	<u>40</u>	<u>20</u>	<u>50</u>
13.	55	37	64	43	22	14.	74	83	14	95	58
	<u>10</u>	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>		<u>10</u>	<u>20</u>	<u>40</u>	<u>20</u>	<u>50</u>
15.	55	37	64	43	22	16.	74	83	14	95	58
	<u>13</u>	<u>21</u>	<u>32</u>	<u>44</u>	<u>56</u>		<u>12</u>	<u>25</u>	<u>44</u>	<u>22</u>	<u>51</u>
17.	64	81	45	73	26	18.	18	54	83	44	75
	<u>35</u>	<u>16</u>	<u>24</u>	<u>15</u>	<u>32</u>		<u>31</u>	<u>32</u>	<u>16</u>	<u>30</u>	<u>11</u>

1. $15 + 2$	2. $64 + 3$	3. $52 + 4$	4. $75 + 5$
$21 + 2$	$27 + 3$	$25 + 4$	$48 + 5$
$36 + 2$	$35 + 3$	$44 + 4$	$33 + 5$
$45 + 2$	$91 + 3$	$88 + 4$	$56 + 5$
$18 + 2$	$84 + 3$	$16 + 4$	$67 + 5$
$57 + 2$	$36 + 3$	$22 + 4$	$71 + 5$
$64 + 2$	$72 + 3$	$53 + 4$	$74 + 5$
$33 + 2$	$29 + 3$	$92 + 4$	$39 + 5$
$12 + 2$	$43 + 3$	$37 + 4$	$82 + 5$
$49 + 2$	$48 + 3$	$41 + 4$	$54 + 5$

Add:

5. $\begin{array}{r} 67 \\ 3 \end{array}$	$\begin{array}{r} 24 \\ 2 \end{array}$	$\begin{array}{r} 36 \\ 4 \end{array}$	$\begin{array}{r} 50 \\ 5 \end{array}$	$\begin{array}{r} 28 \\ 3 \end{array}$	6. $\begin{array}{r} 41 \\ 5 \end{array}$	$\begin{array}{r} 54 \\ 2 \end{array}$	$\begin{array}{r} 65 \\ 4 \end{array}$	$\begin{array}{r} 63 \\ 2 \end{array}$	$\begin{array}{r} 19 \\ 5 \end{array}$
7. $\begin{array}{r} 37 \\ 4 \end{array}$	$\begin{array}{r} 45 \\ 3 \end{array}$	$\begin{array}{r} 92 \\ 5 \end{array}$	$\begin{array}{r} 69 \\ 2 \end{array}$	$\begin{array}{r} 11 \\ 4 \end{array}$	8. $\begin{array}{r} 84 \\ 2 \end{array}$	$\begin{array}{r} 94 \\ 3 \end{array}$	$\begin{array}{r} 37 \\ 5 \end{array}$	$\begin{array}{r} 81 \\ 5 \end{array}$	$\begin{array}{r} 35 \\ 4 \end{array}$
9. $\begin{array}{r} 49 \\ 4 \end{array}$	$\begin{array}{r} 27 \\ 5 \end{array}$	$\begin{array}{r} 38 \\ 3 \end{array}$	$\begin{array}{r} 16 \\ 5 \end{array}$	$\begin{array}{r} 27 \\ 4 \end{array}$	10. $\begin{array}{r} 39 \\ 2 \end{array}$	$\begin{array}{r} 58 \\ 3 \end{array}$	$\begin{array}{r} 87 \\ 4 \end{array}$	$\begin{array}{r} 76 \\ 5 \end{array}$	$\begin{array}{r} 92 \\ 3 \end{array}$
11. $\begin{array}{r} 78 \\ 5 \end{array}$	$\begin{array}{r} 37 \\ 4 \end{array}$	$\begin{array}{r} 89 \\ 5 \end{array}$	$\begin{array}{r} 93 \\ 2 \end{array}$	$\begin{array}{r} 56 \\ 3 \end{array}$	12. $\begin{array}{r} 68 \\ 5 \end{array}$	$\begin{array}{r} 77 \\ 4 \end{array}$	$\begin{array}{r} 88 \\ 3 \end{array}$	$\begin{array}{r} 29 \\ 2 \end{array}$	$\begin{array}{r} 18 \\ 5 \end{array}$

13. $\begin{array}{r} 44 \\ 36 \end{array}$	$\begin{array}{r} 81 \\ 49 \end{array}$	$\begin{array}{r} 25 \\ 36 \end{array}$	$\begin{array}{r} 52 \\ 39 \end{array}$	14. $\begin{array}{r} 88 \\ 52 \end{array}$	$\begin{array}{r} 39 \\ 17 \end{array}$	$\begin{array}{r} 42 \\ 29 \end{array}$	$\begin{array}{r} 53 \\ 38 \end{array}$
15. $\begin{array}{r} 53 \\ 25 \end{array}$	$\begin{array}{r} 49 \\ 27 \end{array}$	$\begin{array}{r} 68 \\ 33 \end{array}$	$\begin{array}{r} 48 \\ 44 \end{array}$	16. $\begin{array}{r} 57 \\ 12 \end{array}$	$\begin{array}{r} 72 \\ 33 \end{array}$	$\begin{array}{r} 95 \\ 55 \end{array}$	$\begin{array}{r} 81 \\ 47 \end{array}$
17. $\begin{array}{r} 25 \\ 58 \end{array}$	$\begin{array}{r} 37 \\ 70 \end{array}$	$\begin{array}{r} 82 \\ 35 \end{array}$	$\begin{array}{r} 58 \\ 37 \end{array}$	18. $\begin{array}{r} 24 \\ 47 \end{array}$	$\begin{array}{r} 36 \\ 63 \end{array}$	$\begin{array}{r} 54 \\ 45 \end{array}$	$\begin{array}{r} 28 \\ 69 \end{array}$
19. $\begin{array}{r} 19 \\ 34 \end{array}$	$\begin{array}{r} 28 \\ 63 \end{array}$	$\begin{array}{r} 39 \\ 29 \end{array}$	$\begin{array}{r} 56 \\ 36 \end{array}$	20. $\begin{array}{r} 45 \\ 37 \end{array}$	$\begin{array}{r} 82 \\ 94 \end{array}$	$\begin{array}{r} 16 \\ 65 \end{array}$	$\begin{array}{r} 44 \\ 37 \end{array}$

tables and the tables of denominate numbers, and form the habit of referring to these tables whenever in doubt about the facts which are to be found stated in them.

On pages 84 and 124 will be found a few suggestions for one-minute exercises and speed tests, indicating ways in which almost any exercise may be used after it has been sufficiently practiced.

Pupils should frequently be allowed to choose the exercise for study. A few minutes' drill on this exercise will show each member of the class where his own weakness lies, and after a period of study — preferably in groups — individuals may be timed in reciting either the whole exercise or some part of it. Or, a row of pupils, each in turn answering one question, may compete with another row reciting in the same manner.

Another suggestion is that a boy be chosen by the boys and a girl by the girls to compete with each other, answering questions alternately from a given exercise. If the boy makes a mistake the girls win, and *vice versa*. If neither one makes a mistake, it is a tie. Another boy and girl are then chosen, and the game proceeds as before.

Still another suggestion is that a game like the old-fashioned spelling match be made of these exercises, the pupils being evenly divided on "sides." The teacher should choose simple exercises for this game, and should put the questions herself.

As teachers become familiar with the contents of this book, they will develop methods of drill better suited, perhaps, to the needs of their classes than any here suggested. The important fact to keep in mind is that the only good drill is a lively one. The success of any drill is measured by the degree of interest aroused.

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## WHOLE NUMBERS ADDITION

1. 1 and 2	2. 4 + 3	3. 3 and 4	4. 6 + 5
5 and 2	7 + 3	5 and 4	2 + 5
4 and 2	3 + 3	1 and 4	1 + 5
7 and 2	8 + 3	0 and 4	7 + 5
3 and 2	9 + 3	6 and 4	8 + 5
9 and 2	0 + 3	8 and 4	3 + 5
8 and 2	2 + 3	2 and 4	9 + 5
2 and 2	6 + 3	9 and 4	0 + 5
6 and 2	1 + 3	4 and 4	4 + 5
0 and 2	5 + 3	7 and 4	5 + 5

---

5. 10 + 4	6. 20 + 2	7. 30 + 5	8. 40 + 3
11 + 3	21 + 5	31 + 2	41 + 4
12 + 3	22 + 2	32 + 4	42 + 5
13 + 4	23 + 3	33 + 2	43 + 5
14 + 2	24 + 5	34 + 3	44 + 4
15 + 5	25 + 2	35 + 4	45 + 3
16 + 2	26 + 3	36 + 5	46 + 4
17 + 5	27 + 4	37 + 3	47 + 2
18 + 3	28 + 5	38 + 2	48 + 4
19 + 4	29 + 3	39 + 5	49 + 2

Add:

9. 5    6    4    3    6	10. 7    3    8    6    2
4    6    8    9    0	5    6    8    7    5
9    2    7    7    8	2    9    4    8    9
11. 3    9    6    3    5	12. 3    2    7    6    9
7    5    4    7    0	9    2    3    7    0
6    8    9    7    8	9    7    3    8    7
13. 1    3    2    1    2	14. 6    5    8    4    7
2    0    4    5    8	6    7    5    4    7
8    9    5    9    6	6    5    8    4    7

# WHOLE NUMBERS ADDITION

- |             |          |            |          |
|-------------|----------|------------|----------|
| 1. 6 plus 6 | 2. 3 + 7 | 3. 5 and 8 | 4. 1 + 9 |
| 0 plus 6    | 6 + 7    | 9 and 8    | 4 + 9    |
| 3 plus 6    | 9 + 7    | 1 and 8    | 0 + 9    |
| 1 plus 6    | 2 + 7    | 7 and 8    | 9 + 9    |
| 5 plus 6    | 4 + 7    | 2 and 8    | 6 + 9    |
| 2 plus 6    | 8 + 7    | 8 and 8    | 2 + 9    |
| 9 plus 6    | 1 + 7    | 3 and 8    | 8 + 9    |
| 8 plus 6    | 5 + 7    | 0 and 8    | 3 + 9    |
| 7 plus 6    | 7 + 7    | 4 and 8    | 7 + 9    |
| 4 plus 6    | 0 + 7    | 6 and 8    | 5 + 9    |
- 

- |           |           |           |           |
|-----------|-----------|-----------|-----------|
| 5. 50 + 8 | 6. 60 + 9 | 7. 70 + 6 | 8. 80 + 7 |
| 51 + 6    | 61 + 7    | 71 + 8    | 81 + 9    |
| 52 + 7    | 62 + 8    | 72 + 9    | 82 + 6    |
| 53 + 7    | 63 + 8    | 73 + 9    | 83 + 6    |
| 54 + 9    | 64 + 7    | 74 + 6    | 84 + 8    |
| 55 + 7    | 65 + 9    | 75 + 6    | 85 + 8    |
| 56 + 6    | 66 + 8    | 76 + 9    | 86 + 7    |
| 57 + 8    | 67 + 7    | 77 + 6    | 87 + 9    |
| 58 + 9    | 68 + 8    | 78 + 7    | 88 + 6    |
| 59 + 6    | 69 + 9    | 79 + 8    | 89 + 7    |
- 

Add:

- |   |   |
|---|---|
| 9. 5    3    9    2    5                          | 10. 6    3    8    7    9                         |
| 4    8    0    4    1                             | 7    2    7    1    2                             |
| 6    7    7    6    0                             | 6    5    8    0    9                             |
| 2    2    1    8    9                             | 7    8    7    8    2                             |
| <u>  </u> <u>  </u> <u>  </u> <u>  </u> <u>  </u> | <u>  </u> <u>  </u> <u>  </u> <u>  </u> <u>  </u> |
| 11. 2    3    7    8    6                         | 12. 9    3    2    3    9                         |
| 8    5    7    8    6                             | 2    5    2    8    6                             |
| 0    6    9    4    3                             | 0    4    9    8    4                             |
| 9    8    9    4    3                             | 7    8    5    2    1                             |
| <u>  </u> <u>  </u> <u>  </u> <u>  </u> <u>  </u> | <u>  </u> <u>  </u> <u>  </u> <u>  </u> <u>  </u> |

## WHOLE NUMBERS

## ADDITION

3

1.	1	2	3	4	5	2.	6	7	8	9	0
	<u>6</u>	<u>5</u>	<u>4</u>	<u>5</u>	<u>8</u>		<u>5</u>	<u>9</u>	<u>9</u>	<u>2</u>	<u>7</u>
3.	1	2	3	4	5	4.	6	7	8	9	6
	<u>4</u>	<u>9</u>	<u>6</u>	<u>9</u>	<u>7</u>		<u>7</u>	<u>6</u>	<u>4</u>	<u>4</u>	<u>6</u>
5.	1	2	3	4	5	6.	6	7	8	9	0
	<u>7</u>	<u>6</u>	<u>5</u>	<u>2</u>	<u>9</u>		<u>8</u>	<u>7</u>	<u>8</u>	<u>3</u>	<u>9</u>
7.	1	2	3	4	5	8.	6	7	8	9	7
	<u>8</u>	<u>7</u>	<u>8</u>	<u>4</u>	<u>1</u>		<u>9</u>	<u>4</u>	<u>7</u>	<u>9</u>	<u>2</u>
9.	8	9	3	4	5	10.	7	2	5	1	6
	<u>2</u>	<u>1</u>	<u>7</u>	<u>6</u>	<u>5</u>		<u>3</u>	<u>8</u>	<u>5</u>	<u>9</u>	<u>4</u>
11.	3	7	4	5	5	12.	4	2	1	9	3
	<u>3</u>	<u>2</u>	<u>4</u>	<u>3</u>	<u>4</u>		<u>0</u>	<u>2</u>	<u>8</u>	<u>0</u>	<u>6</u>
	<u>4</u>	<u>1</u>	<u>2</u>	<u>2</u>	<u>1</u>		<u>6</u>	<u>6</u>	<u>1</u>	<u>1</u>	<u>1</u>
13.	7	3	4	8	6	14.	3	9	8	9	4
	<u>5</u>	<u>1</u>	<u>2</u>	<u>7</u>	<u>6</u>		<u>5</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>9</u>
	<u>2</u>	<u>9</u>	<u>6</u>	<u>3</u>	<u>3</u>		<u>3</u>	<u>4</u>	<u>7</u>	<u>3</u>	<u>7</u>
15.	7	9	3	4	8	16.	5	8	7	6	4
	<u>8</u>	<u>2</u>	<u>4</u>	<u>7</u>	<u>8</u>		<u>4</u>	<u>2</u>	<u>3</u>	<u>8</u>	<u>5</u>
	<u>6</u>	<u>5</u>	<u>6</u>	<u>5</u>	<u>2</u>		<u>5</u>	<u>3</u>	<u>5</u>	<u>6</u>	<u>8</u>
17.	2	5	6	5	3	18.	6	2	4	6	1
	<u>8</u>	<u>9</u>	<u>0</u>	<u>1</u>	<u>3</u>		<u>8</u>	<u>9</u>	<u>8</u>	<u>3</u>	<u>8</u>
	<u>3</u>	<u>7</u>	<u>4</u>	<u>7</u>	<u>2</u>		<u>4</u>	<u>1</u>	<u>5</u>	<u>2</u>	<u>4</u>
	<u>1</u>	<u>2</u>	<u>8</u>	<u>7</u>	<u>8</u>		<u>9</u>	<u>7</u>	<u>5</u>	<u>4</u>	<u>7</u>
19.	5	7	8	4	2	20.	6	5	3	7	3
	<u>8</u>	<u>9</u>	<u>6</u>	<u>6</u>	<u>2</u>		<u>4</u>	<u>0</u>	<u>8</u>	<u>7</u>	<u>9</u>
	<u>7</u>	<u>5</u>	<u>1</u>	<u>3</u>	<u>8</u>		<u>3</u>	<u>5</u>	<u>3</u>	<u>2</u>	<u>6</u>
	<u>6</u>	<u>3</u>	<u>9</u>	<u>7</u>	<u>9</u>		<u>3</u>	<u>9</u>	<u>7</u>	<u>4</u>	<u>5</u>

1.  $1 + 6$

$2 + 5$

$3 + 4$

$4 + 6$

$5 + 8$

$6 + 4$

$7 + 9$

$8 + 6$

$9 + 2$

$0 + 7$

2.  $1 + 4$

$2 + 8$

$3 + 6$

$4 + 9$

$5 + 2$

$6 + 7$

$7 + 3$

$8 + 4$

$9 + 5$

$0 + 0$

3.  $1 + 7$

$2 + 6$

$3 + 5$

$4 + 8$

$5 + 3$

$6 + 8$

$7 + 2$

$8 + 5$

$9 + 4$

$0 + 9$

4.  $1 + 9$

$2 + 7$

$3 + 8$

$4 + 4$

$5 + 5$

$6 + 9$

$7 + 4$

$8 + 7$

$9 + 9$

$0 + 2$

Add:

5.	13	24	49	27
	<u>5</u>	<u>6</u>	<u>8</u>	<u>6</u>

6.	12	39	73	44
	<u>2</u>	<u>5</u>	<u>8</u>	<u>7</u>

7.	65	34	19	51
	<u>8</u>	<u>5</u>	<u>6</u>	<u>5</u>

8.	77	66	55	13
	<u>7</u>	<u>6</u>	<u>8</u>	<u>7</u>

9.	33	42	87	91
	<u>8</u>	<u>8</u>	<u>5</u>	<u>7</u>

10.	75	69	25	48
	<u>4</u>	<u>8</u>	<u>6</u>	<u>4</u>

11.	5	3	8	6	4
	<u>6</u>	<u>7</u>	<u>0</u>	<u>3</u>	<u>1</u>
	0	2	8	7	3
	<u>4</u>	<u>9</u>	<u>4</u>	<u>2</u>	<u>8</u>
	<u>5</u>	<u>1</u>	<u>3</u>	<u>5</u>	<u>2</u>

12.	6	2	6	5	3
	<u>7</u>	<u>8</u>	<u>0</u>	<u>8</u>	<u>3</u>
	1	7	3	8	2
	<u>3</u>	<u>5</u>	<u>8</u>	<u>0</u>	<u>2</u>
	<u>4</u>	<u>2</u>	<u>1</u>	<u>4</u>	<u>4</u>

13.	3	4	7	8	6
	<u>9</u>	<u>0</u>	<u>8</u>	<u>3</u>	<u>6</u>
	8	6	1	5	2
	<u>2</u>	<u>6</u>	<u>9</u>	<u>0</u>	<u>2</u>
	<u>2</u>	<u>3</u>	<u>2</u>	<u>9</u>	<u>5</u>

14.	7	3	2	1	9
	<u>8</u>	<u>4</u>	<u>4</u>	<u>3</u>	<u>0</u>
	0	5	6	5	8
	<u>3</u>	<u>6</u>	<u>0</u>	<u>7</u>	<u>2</u>
	<u>7</u>	<u>7</u>	<u>8</u>	<u>1</u>	<u>4</u>

1. $1 + 5$	2. $5 + 1$	3. $8 + 8$	4. $2 + 3$
$9 + 7$	$2 + 4$	$1 + 8$	$7 + 5$
$4 + 5$	$6 + 5$	$9 + 6$	$9 + 1$
$3 + 7$	$7 + 7$	$7 + 6$	$3 + 9$
$2 + 9$	$8 + 1$	$5 + 9$	$8 + 9$
$5 + 6$	$9 + 8$	$2 + 3$	$6 + 3$
$8 + 3$	$4 + 7$	$4 + 3$	$4 + 2$
$7 + 8$	$3 + 2$	$6 + 2$	$7 + 5$
$4 + 1$	$5 + 7$	$3 + 3$	$5 + 4$
$6 + 6$	$7 + 1$	$8 + 2$	$9 + 3$

Add:

5.	<u>24</u> 12	<u>16</u> 32	<u>44</u> 22	<u>57</u> 30	6.	<u>42</u> 26	<u>50</u> 18	<u>29</u> 10	<u>19</u> 50		
7.	<u>75</u> 11	<u>38</u> 40	<u>73</u> 24	<u>61</u> 17	8.	<u>15</u> 31	<u>46</u> 12	<u>64</u> 33	<u>70</u> 25		
9.	<u>25</u> 42	<u>16</u> 31	<u>80</u> 19	<u>21</u> 23	10.	<u>15</u> 51	<u>35</u> 42	<u>49</u> 30	<u>36</u> 41		
<hr/>											
11.	7 1 4 3 5 6 —	8 0 8 2 4 5 —	3 3 9 8 7 2 —	6 4 3 9 0 7 —	2	12.	9 0 1 6 7 9 —	7 7 4 2 0 8 —	5 1 8 7 6 3 —	9 2 3 8 0 8 —	6 6 5 2 5 1 —
13.	4 3 3 4 2 2	6 1 7 2 8 9	5 6 4 5 2 3	3 3 3 1 1 2	5 4 1 7 1 1	14.	8 3 7 6 5 7	2 5 6 9 8 4	3 2 5 4 7 6	9 8 7 6 5 4	6 5 4 3 2 1

Add:

1.	<u>9</u>	<u>7</u>	<u>3</u>	<u>8</u>	<u>6</u>	2.	<u>5</u>	<u>8</u>	<u>4</u>	<u>2</u>	<u>9</u>
	<u>8</u>	<u>6</u>	<u>4</u>	<u>2</u>	<u>9</u>		<u>5</u>	<u>6</u>	<u>5</u>	<u>7</u>	<u>5</u>
3.	<u>7</u>	<u>5</u>	<u>6</u>	<u>8</u>	<u>9</u>	4.	<u>9</u>	<u>8</u>	<u>5</u>	<u>6</u>	<u>4</u>
	<u>9</u>	<u>4</u>	<u>6</u>	<u>0</u>	<u>3</u>		<u>9</u>	<u>3</u>	<u>7</u>	<u>9</u>	<u>7</u>
5.	<u>8</u>	<u>7</u>	<u>4</u>	<u>2</u>	<u>5</u>	6.	<u>1</u>	<u>8</u>	<u>5</u>	<u>6</u>	<u>7</u>
	<u>8</u>	<u>7</u>	<u>6</u>	<u>9</u>	<u>8</u>		<u>9</u>	<u>7</u>	<u>0</u>	<u>5</u>	<u>3</u>

7.	13 + 4	8.	62 plus 2	9.	17 + 7	10.	36 + 6
	27 + 9		45 plus 4		19 + 6		22 + 7
	84 + 6		37 plus 3		38 + 5		33 + 8
	55 + 8		89 plus 7		23 + 4		44 + 9
	31 + 5		52 plus 5		14 + 9		55 + 8
	42 + 8		21 plus 9		66 + 8		66 + 7
	26 + 5		93 plus 8		43 + 7		77 + 6
	57 + 7		64 plus 6		29 + 3		88 + 5
	45 + 3		33 plus 5		34 + 5		19 + 4
	78 + 6		88 plus 8		50 + 6		26 + 3

Add:

11.	<u>50</u>	<u>30</u>	<u>60</u>	<u>40</u>	<u>20</u>	12.	<u>70</u>	<u>80</u>	<u>10</u>	<u>90</u>	<u>50</u>
	<u>10</u>	<u>20</u>	<u>80</u>	<u>40</u>	<u>50</u>		<u>10</u>	<u>20</u>	<u>40</u>	<u>20</u>	<u>50</u>
13.	<u>55</u>	<u>37</u>	<u>64</u>	<u>43</u>	<u>22</u>	14.	<u>74</u>	<u>83</u>	<u>14</u>	<u>95</u>	<u>58</u>
	<u>10</u>	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>		<u>10</u>	<u>20</u>	<u>40</u>	<u>20</u>	<u>50</u>
15.	<u>55</u>	<u>37</u>	<u>64</u>	<u>43</u>	<u>22</u>	16.	<u>74</u>	<u>83</u>	<u>14</u>	<u>95</u>	<u>58</u>
	<u>13</u>	<u>21</u>	<u>32</u>	<u>44</u>	<u>56</u>		<u>12</u>	<u>25</u>	<u>44</u>	<u>22</u>	<u>51</u>
17.	<u>64</u>	<u>81</u>	<u>45</u>	<u>73</u>	<u>26</u>	18.	<u>18</u>	<u>54</u>	<u>83</u>	<u>44</u>	<u>75</u>
	<u>35</u>	<u>16</u>	<u>24</u>	<u>15</u>	<u>32</u>		<u>31</u>	<u>32</u>	<u>16</u>	<u>30</u>	<u>11</u>

- |             |             |             |             |
|-------------|-------------|-------------|-------------|
| 1. $15 + 2$ | 2. $64 + 3$ | 3. $52 + 4$ | 4. $75 + 5$ |
| $21 + 2$    | $27 + 3$    | $25 + 4$    | $48 + 5$    |
| $36 + 2$    | $35 + 3$    | $44 + 4$    | $33 + 5$    |
| $45 + 2$    | $91 + 3$    | $88 + 4$    | $56 + 5$    |
| $18 + 2$    | $84 + 3$    | $16 + 4$    | $67 + 5$    |
| $57 + 2$    | $36 + 3$    | $22 + 4$    | $71 + 5$    |
| $64 + 2$    | $72 + 3$    | $53 + 4$    | $74 + 5$    |
| $33 + 2$    | $29 + 3$    | $92 + 4$    | $39 + 5$    |
| $12 + 2$    | $43 + 3$    | $37 + 4$    | $82 + 5$    |
| $49 + 2$    | $48 + 3$    | $41 + 4$    | $54 + 5$    |

Add:

- |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
| 5. $\begin{array}{r} 67 \\ 3 \end{array}$  | $\begin{array}{r} 24 \\ 2 \end{array}$ | $\begin{array}{r} 36 \\ 4 \end{array}$ | $\begin{array}{r} 50 \\ 5 \end{array}$ | $\begin{array}{r} 28 \\ 3 \end{array}$ | 6. $\begin{array}{r} 41 \\ 5 \end{array}$  | $\begin{array}{r} 54 \\ 2 \end{array}$ | $\begin{array}{r} 65 \\ 4 \end{array}$ | $\begin{array}{r} 63 \\ 2 \end{array}$ | $\begin{array}{r} 19 \\ 5 \end{array}$ |
| 7. $\begin{array}{r} 37 \\ 4 \end{array}$  | $\begin{array}{r} 45 \\ 3 \end{array}$ | $\begin{array}{r} 92 \\ 5 \end{array}$ | $\begin{array}{r} 69 \\ 2 \end{array}$ | $\begin{array}{r} 11 \\ 4 \end{array}$ | 8. $\begin{array}{r} 84 \\ 2 \end{array}$  | $\begin{array}{r} 94 \\ 3 \end{array}$ | $\begin{array}{r} 37 \\ 5 \end{array}$ | $\begin{array}{r} 81 \\ 5 \end{array}$ | $\begin{array}{r} 35 \\ 4 \end{array}$ |
| 9. $\begin{array}{r} 49 \\ 4 \end{array}$  | $\begin{array}{r} 27 \\ 5 \end{array}$ | $\begin{array}{r} 38 \\ 3 \end{array}$ | $\begin{array}{r} 16 \\ 5 \end{array}$ | $\begin{array}{r} 27 \\ 4 \end{array}$ | 10. $\begin{array}{r} 39 \\ 2 \end{array}$ | $\begin{array}{r} 58 \\ 3 \end{array}$ | $\begin{array}{r} 87 \\ 4 \end{array}$ | $\begin{array}{r} 76 \\ 5 \end{array}$ | $\begin{array}{r} 92 \\ 3 \end{array}$ |
| 11. $\begin{array}{r} 78 \\ 5 \end{array}$ | $\begin{array}{r} 37 \\ 4 \end{array}$ | $\begin{array}{r} 89 \\ 5 \end{array}$ | $\begin{array}{r} 93 \\ 2 \end{array}$ | $\begin{array}{r} 56 \\ 3 \end{array}$ | 12. $\begin{array}{r} 68 \\ 5 \end{array}$ | $\begin{array}{r} 77 \\ 4 \end{array}$ | $\begin{array}{r} 88 \\ 3 \end{array}$ | $\begin{array}{r} 29 \\ 2 \end{array}$ | $\begin{array}{r} 18 \\ 5 \end{array}$ |

- |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 13. $\begin{array}{r} 44 \\ 36 \end{array}$ | $\begin{array}{r} 81 \\ 49 \end{array}$ | $\begin{array}{r} 25 \\ 36 \end{array}$ | $\begin{array}{r} 52 \\ 39 \end{array}$ | 14. $\begin{array}{r} 88 \\ 52 \end{array}$ | $\begin{array}{r} 39 \\ 17 \end{array}$ | $\begin{array}{r} 42 \\ 29 \end{array}$ | $\begin{array}{r} 53 \\ 38 \end{array}$ |
| 15. $\begin{array}{r} 53 \\ 25 \end{array}$ | $\begin{array}{r} 49 \\ 27 \end{array}$ | $\begin{array}{r} 68 \\ 33 \end{array}$ | $\begin{array}{r} 48 \\ 44 \end{array}$ | 16. $\begin{array}{r} 57 \\ 12 \end{array}$ | $\begin{array}{r} 72 \\ 33 \end{array}$ | $\begin{array}{r} 95 \\ 55 \end{array}$ | $\begin{array}{r} 81 \\ 47 \end{array}$ |
| 17. $\begin{array}{r} 25 \\ 58 \end{array}$ | $\begin{array}{r} 37 \\ 70 \end{array}$ | $\begin{array}{r} 82 \\ 35 \end{array}$ | $\begin{array}{r} 58 \\ 37 \end{array}$ | 18. $\begin{array}{r} 24 \\ 47 \end{array}$ | $\begin{array}{r} 36 \\ 63 \end{array}$ | $\begin{array}{r} 54 \\ 45 \end{array}$ | $\begin{array}{r} 28 \\ 69 \end{array}$ |
| 19. $\begin{array}{r} 19 \\ 34 \end{array}$ | $\begin{array}{r} 28 \\ 63 \end{array}$ | $\begin{array}{r} 39 \\ 29 \end{array}$ | $\begin{array}{r} 56 \\ 36 \end{array}$ | 20. $\begin{array}{r} 45 \\ 37 \end{array}$ | $\begin{array}{r} 82 \\ 94 \end{array}$ | $\begin{array}{r} 16 \\ 65 \end{array}$ | $\begin{array}{r} 44 \\ 37 \end{array}$ |



1. $15 + 6$	2. $64 + 7$	3. $52 + 8$	4. $75 + 9$
$21 + 6$	$27 + 7$	$25 + 8$	$48 + 9$
$36 + 6$	$35 + 7$	$44 + 8$	$33 + 9$
$45 + 6$	$91 + 7$	$88 + 8$	$56 + 9$
$18 + 6$	$84 + 7$	$16 + 8$	$67 + 9$
$57 + 6$	$36 + 7$	$22 + 8$	$71 + 9$
$64 + 6$	$72 + 7$	$53 + 8$	$74 + 9$
$33 + 6$	$29 + 7$	$92 + 8$	$39 + 9$
$12 + 6$	$43 + 7$	$37 + 8$	$82 + 9$
$49 + 6$	$48 + 7$	$41 + 8$	$54 + 9$

Add:

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5. $\begin{array}{r} 67 \\ 8 \end{array}$	$\begin{array}{r} 24 \\ 6 \end{array}$	$\begin{array}{r} 36 \\ 9 \end{array}$	$\begin{array}{r} 50 \\ 7 \end{array}$	$\begin{array}{r} 28 \\ 8 \end{array}$	6. $\begin{array}{r} 41 \\ 7 \end{array}$	$\begin{array}{r} 54 \\ 6 \end{array}$	$\begin{array}{r} 65 \\ 8 \end{array}$	$\begin{array}{r} 63 \\ 9 \end{array}$	$\begin{array}{r} 19 \\ 6 \end{array}$
7. $\begin{array}{r} 37 \\ 7 \end{array}$	$\begin{array}{r} 45 \\ 7 \end{array}$	$\begin{array}{r} 92 \\ 8 \end{array}$	$\begin{array}{r} 69 \\ 9 \end{array}$	$\begin{array}{r} 11 \\ 6 \end{array}$	8. $\begin{array}{r} 84 \\ 8 \end{array}$	$\begin{array}{r} 94 \\ 6 \end{array}$	$\begin{array}{r} 37 \\ 8 \end{array}$	$\begin{array}{r} 81 \\ 7 \end{array}$	$\begin{array}{r} 35 \\ 9 \end{array}$
9. $\begin{array}{r} 49 \\ 6 \end{array}$	$\begin{array}{r} 15 \\ 7 \end{array}$	$\begin{array}{r} 62 \\ 9 \end{array}$	$\begin{array}{r} 92 \\ 6 \end{array}$	$\begin{array}{r} 35 \\ 8 \end{array}$	10. $\begin{array}{r} 27 \\ 7 \end{array}$	$\begin{array}{r} 12 \\ 6 \end{array}$	$\begin{array}{r} 35 \\ 7 \end{array}$	$\begin{array}{r} 63 \\ 8 \end{array}$	$\begin{array}{r} 84 \\ 6 \end{array}$
11. $\begin{array}{r} 75 \\ 8 \end{array}$	$\begin{array}{r} 37 \\ 6 \end{array}$	$\begin{array}{r} 46 \\ 9 \end{array}$	$\begin{array}{r} 73 \\ 7 \end{array}$	$\begin{array}{r} 52 \\ 7 \end{array}$	12. $\begin{array}{r} 39 \\ 8 \end{array}$	$\begin{array}{r} 84 \\ 6 \end{array}$	$\begin{array}{r} 28 \\ 8 \end{array}$	$\begin{array}{r} 45 \\ 6 \end{array}$	$\begin{array}{r} 81 \\ 9 \end{array}$

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13. $\begin{array}{r} 36 \\ 25 \end{array}$	$\begin{array}{r} 44 \\ 15 \end{array}$	$\begin{array}{r} 85 \\ 25 \end{array}$	$\begin{array}{r} 23 \\ 38 \end{array}$	$\begin{array}{r} 92 \\ 78 \end{array}$	14. $\begin{array}{r} 51 \\ 39 \end{array}$	$\begin{array}{r} 27 \\ 12 \end{array}$	$\begin{array}{r} 44 \\ 27 \end{array}$	$\begin{array}{r} 66 \\ 35 \end{array}$	$\begin{array}{r} 18 \\ 24 \end{array}$
15. $\begin{array}{r} 81 \\ 18 \end{array}$	$\begin{array}{r} 37 \\ 24 \end{array}$	$\begin{array}{r} 25 \\ 36 \end{array}$	$\begin{array}{r} 48 \\ 22 \end{array}$	$\begin{array}{r} 92 \\ 17 \end{array}$	16. $\begin{array}{r} 53 \\ 37 \end{array}$	$\begin{array}{r} 66 \\ 33 \end{array}$	$\begin{array}{r} 74 \\ 81 \end{array}$	$\begin{array}{r} 35 \\ 56 \end{array}$	$\begin{array}{r} 27 \\ 19 \end{array}$
17. $\begin{array}{r} 92 \\ 72 \end{array}$	$\begin{array}{r} 18 \\ 23 \end{array}$	$\begin{array}{r} 50 \\ 65 \end{array}$	$\begin{array}{r} 73 \\ 27 \end{array}$	$\begin{array}{r} 44 \\ 36 \end{array}$	18. $\begin{array}{r} 55 \\ 15 \end{array}$	$\begin{array}{r} 87 \\ 29 \end{array}$	$\begin{array}{r} 77 \\ 60 \end{array}$	$\begin{array}{r} 85 \\ 25 \end{array}$	$\begin{array}{r} 74 \\ 56 \end{array}$
19. $\begin{array}{r} 58 \\ 12 \end{array}$	$\begin{array}{r} 27 \\ 12 \end{array}$	$\begin{array}{r} 33 \\ 66 \end{array}$	$\begin{array}{r} 81 \\ 34 \end{array}$	$\begin{array}{r} 28 \\ 29 \end{array}$	20. $\begin{array}{r} 15 \\ 56 \end{array}$	$\begin{array}{r} 22 \\ 80 \end{array}$	$\begin{array}{r} 64 \\ 40 \end{array}$	$\begin{array}{r} 19 \\ 36 \end{array}$	$\begin{array}{r} 70 \\ 25 \end{array}$

To add 9, add 10 and subtract 1.

1. 15	2. 66	3. 34	4. 24
23	44	45	36
67	33	56	48
84	22	27	52
19	11	78	61
32	35	89	73
55	88	92	85
60	77	21	47
38	25	40	29
46	30	13	70

5. 24 plus 2 plus 5	6. 32 + 5 + 4 + 3
13 plus 3 plus 9	48 + 3 + 7 + 7
42 plus 4 plus 7	82 + 6 + 4 + 5
50 plus 7 plus 8	35 + 4 + 2 + 8
12 plus 3 plus 6	17 + 7 + 5 + 9
37 plus 9 plus 4	56 + 8 + 10 + 4
64 plus 5 plus 2	77 + 3 + 3 + 9

**Note.** The following method of adding is for higher grades only.

Learn to recognize at a glance groups of figures which make 10.

7. 6	2	3	5	7	8. 3	2	6	3	3
5	0	8	1	6	8	4	6	9	3
2	6	1	4	3	8	3	3	6	4
3	3	1	7	2	2	6	2	4	2
7	1	7	6	5	1	9	4	2	9
4	8	5	3	8	7	4	4	8	5
3	9	2	0	4	5	8	3	6	1
3	3	6	1	7	9	1	7	6	0
2	0	2	5	0	6	0	4	3	4
9	3	3	5	9	2	1	4	1	7
1	4	6	8	5	2	4	1	4	7

To add 11, add 10 and 1 more.

1. 15	2. 66	3. 34	4. 24
23	44	45	36
67	33	56	48
84	22	27	52
19	11	78	61
32	35	89	73
55	88	92	85
60	77	21	47
38	25	40	29
46	30	13	70

Add:

- |                        |                   |
|------------------------|-------------------|
| 5. 7, 11, 6, 5, and 9. | 6. 13, 9, and 11. |
| 8, 3, 4, 8, and 11.    | 27, 9, and 11.    |
| 5, 8, 3, 9, and 2.     | 54, 9, and 11.    |
| 6, 4, 4, 11, and 7.    | 62, 9, and 11.    |
| 3, 8, 9, 5, and 8.     | 39, 9, and 11.    |
| 4, 5, 5, 3, and 11.    | 45, 9, and 11.    |
| 2, 6, 8, 10, and 3.    | 76, 9, and 11.    |
| 5, 3, 7, 9, and 6.     | 28, 9, and 11.    |

Groups of figures which equal 10 may be called 10 in adding.

7. 5	4	5	2	7	8. 2	8	2	6	8
6	8	3	4	3	6	7	5	6	1
0	6	2	8	7	2	3	3	5	6
2	9	1	3	5	2	5	2	5	4
7	1	9	1	0	4	4	8	2	5
1	2	7	8	4	5	1	7	8	7
9	3	6	1	5	5	2	4	7	8
3	5	3	7	1	1	8	3	4	2
5	7	3	0	3	9	6	3	3	5
4	3	4	3	2	7	7	5	5	6
1	4	9	5	8	4	7	5	6	3

$$\begin{array}{r} 1. \quad 31 \\ 42 \\ 83 \\ 24 \\ 60 \\ 55 \\ 26 \\ 47 \\ 28 \\ 69 \end{array} \left. \vphantom{\begin{array}{r} 31 \\ 42 \\ 83 \\ 24 \\ 60 \\ 55 \\ 26 \\ 47 \\ 28 \\ 69 \end{array}} \right\} + 2$$

$$\begin{array}{r} 2. \quad 22 \\ 59 \\ 63 \\ 91 \\ 87 \\ 44 \\ 25 \\ 30 \\ 76 \\ 38 \end{array} \left. \vphantom{\begin{array}{r} 22 \\ 59 \\ 63 \\ 91 \\ 87 \\ 44 \\ 25 \\ 30 \\ 76 \\ 38 \end{array}} \right\} + 3$$

$$\begin{array}{r} 3. \quad 86 \\ 21 \\ 32 \\ 90 \\ 48 \\ 53 \\ 84 \\ 67 \\ 35 \\ 29 \end{array} \left. \vphantom{\begin{array}{r} 86 \\ 21 \\ 32 \\ 90 \\ 48 \\ 53 \\ 84 \\ 67 \\ 35 \\ 29 \end{array}} \right\} + 4$$

$$\begin{array}{r} 4. \quad 85 \\ 62 \\ 49 \\ 37 \\ 71 \\ 20 \\ 33 \\ 58 \\ 64 \\ 46 \end{array} \left. \vphantom{\begin{array}{r} 85 \\ 62 \\ 49 \\ 37 \\ 71 \\ 20 \\ 33 \\ 58 \\ 64 \\ 46 \end{array}} \right\} + 5$$

$$\begin{array}{r} 5. \quad 46 \\ 64 \\ 80 \\ 58 \\ 33 \\ 71 \\ 37 \\ 49 \\ 62 \\ 85 \end{array} \left. \vphantom{\begin{array}{r} 46 \\ 64 \\ 80 \\ 58 \\ 33 \\ 71 \\ 37 \\ 49 \\ 62 \\ 85 \end{array}} \right\} + 6$$

$$\begin{array}{r} 6. \quad 29 \\ 35 \\ 67 \\ 84 \\ 53 \\ 48 \\ 32 \\ 21 \\ 70 \\ 86 \end{array} \left. \vphantom{\begin{array}{r} 29 \\ 35 \\ 67 \\ 84 \\ 53 \\ 48 \\ 32 \\ 21 \\ 70 \\ 86 \end{array}} \right\} + 7$$

$$\begin{array}{r} 7. \quad 38 \\ 76 \\ 25 \\ 44 \\ 50 \\ 87 \\ 91 \\ 63 \\ 59 \\ 22 \end{array} \left. \vphantom{\begin{array}{r} 38 \\ 76 \\ 25 \\ 44 \\ 50 \\ 87 \\ 91 \\ 63 \\ 59 \\ 22 \end{array}} \right\} + 8$$

$$\begin{array}{r} 8. \quad 69 \\ 28 \\ 47 \\ 26 \\ 55 \\ 24 \\ 30 \\ 83 \\ 42 \\ 31 \end{array} \left. \vphantom{\begin{array}{r} 69 \\ 28 \\ 47 \\ 26 \\ 55 \\ 24 \\ 30 \\ 83 \\ 42 \\ 31 \end{array}} \right\} + 9$$

$$\begin{array}{r} 9. \quad 53 \\ 48 \\ 32 \\ 21 \\ 86 \\ 29 \\ 35 \\ 67 \\ 40 \\ 84 \end{array} \left. \vphantom{\begin{array}{r} 53 \\ 48 \\ 32 \\ 21 \\ 86 \\ 29 \\ 35 \\ 67 \\ 40 \\ 84 \end{array}} \right\} + 11$$

$$\begin{array}{r} 10. \quad 91 \\ 63 \\ 59 \\ 22 \\ 38 \\ 76 \\ 60 \\ 25 \\ 44 \\ 87 \end{array} \left. \vphantom{\begin{array}{r} 91 \\ 63 \\ 59 \\ 22 \\ 38 \\ 76 \\ 60 \\ 25 \\ 44 \\ 87 \end{array}} \right\} + 11$$

$$\begin{array}{r} 11. \quad 55 \\ 24 \\ 83 \\ 42 \\ 90 \\ 31 \\ 69 \\ 28 \\ 47 \\ 26 \end{array} \left. \vphantom{\begin{array}{r} 55 \\ 24 \\ 83 \\ 42 \\ 90 \\ 31 \\ 69 \\ 28 \\ 47 \\ 26 \end{array}} \right\} + 12$$

$$\begin{array}{r} 12. \quad 71 \\ 37 \\ 50 \\ 49 \\ 62 \\ 85 \\ 46 \\ 64 \\ 58 \\ 33 \end{array} \left. \vphantom{\begin{array}{r} 71 \\ 37 \\ 50 \\ 49 \\ 62 \\ 85 \\ 46 \\ 64 \\ 58 \\ 33 \end{array}} \right\} + 12$$

Add:

$$\begin{array}{r} 1. \quad 5 \quad 8 \quad 7 \quad 4 \quad 4 \\ \quad 3 \quad 2 \quad 3 \quad 8 \quad 3 \\ \quad 4 \quad 1 \quad 3 \quad 6 \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 4 \quad 2 \quad 3 \quad 8 \quad 7 \\ \quad 3 \quad 9 \quad 7 \quad 8 \quad 1 \\ \quad 6 \quad 5 \quad 8 \quad 2 \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 6 \quad 8 \quad 9 \quad 3 \quad 6 \\ \quad 6 \quad 3 \quad 4 \quad 2 \quad 2 \\ \quad 4 \quad 2 \quad 5 \quad 9 \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 3 \quad 5 \quad 2 \quad 9 \quad 6 \\ \quad 2 \quad 4 \quad 6 \quad 1 \quad 2 \\ \quad 7 \quad 1 \quad 4 \quad 7 \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 6 \quad 3 \quad 9 \quad 5 \quad 7 \\ \quad 7 \quad 5 \quad 8 \quad 5 \quad 2 \\ \quad 3 \quad 2 \quad 4 \quad 4 \quad 4 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 2 \quad 1 \quad 5 \quad 7 \quad 4 \\ \quad 7 \quad 6 \quad 4 \quad 6 \quad 2 \\ \quad 7 \quad 3 \quad 6 \quad 5 \quad 8 \\ \hline \end{array}$$

For 5 and 5, 6 and 4, 7 and 3, 8 and 2, or 9 and 1, add 10.

$$\begin{array}{r} 7. \quad 3 \quad 9 \quad 4 \quad 3 \quad 8 \\ \quad 4 \quad 5 \quad 8 \quad 9 \quad 3 \\ \quad 6 \quad 4 \quad 3 \quad 1 \quad 9 \\ \quad 8 \quad 6 \quad 5 \quad 7 \quad 1 \\ \quad 2 \quad 3 \quad 5 \quad 2 \quad 6 \\ \quad 7 \quad 5 \quad 6 \quad 4 \quad 4 \\ \quad 3 \quad 2 \quad 2 \quad 7 \quad 5 \\ \quad 5 \quad 8 \quad 8 \quad 3 \quad 5 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 5 \quad 4 \quad 7 \quad 5 \quad 9 \\ \quad 5 \quad 3 \quad 0 \quad 2 \quad 1 \\ \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \\ \quad 7 \quad 8 \quad 5 \quad 0 \quad 8 \\ \quad 3 \quad 6 \quad 2 \quad 6 \quad 2 \\ \quad 2 \quad 7 \quad 4 \quad 3 \quad 4 \\ \quad 8 \quad 6 \quad 3 \quad 2 \quad 6 \\ \quad 6 \quad 4 \quad 7 \quad 1 \quad 3 \\ \hline \end{array}$$

Notice the groups of figures which make ten.

$$\begin{array}{r} 9. \quad 7 \quad 5 \quad 4 \quad 7 \quad 2 \\ \quad 3 \quad 5 \quad 0 \quad 9 \quad 6 \\ \quad 4 \quad 4 \quad 3 \quad 0 \quad 3 \\ \quad 5 \quad 2 \quad 2 \quad 1 \quad 5 \\ \quad 5 \quad 6 \quad 7 \quad 3 \quad 4 \\ \quad 2 \quad 0 \quad 3 \quad 7 \quad 1 \\ \quad 9 \quad 3 \quad 6 \quad 2 \quad 8 \\ \quad 0 \quad 8 \quad 1 \quad 6 \quad 6 \\ \quad 6 \quad 2 \quad 6 \quad 6 \quad 4 \\ \quad 1 \quad 7 \quad 4 \quad 5 \quad 1 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 2 \quad 3 \quad 6 \quad 4 \quad 4 \\ \quad 0 \quad 4 \quad 6 \quad 7 \quad 4 \\ \quad 8 \quad 5 \quad 7 \quad 3 \quad 6 \\ \quad 3 \quad 5 \quad 2 \quad 2 \quad 6 \\ \quad 5 \quad 8 \quad 1 \quad 0 \quad 5 \\ \quad 5 \quad 6 \quad 5 \quad 8 \quad 5 \\ \quad 9 \quad 1 \quad 4 \quad 9 \quad 8 \\ \quad 7 \quad 7 \quad 3 \quad 9 \quad 8 \\ \quad 4 \quad 3 \quad 3 \quad 1 \quad 2 \\ \quad 8 \quad 2 \quad 7 \quad 6 \quad 2 \\ \hline \end{array}$$

Add:

$$\begin{array}{r}
 1. \quad 3 \quad 2 \quad 8 \quad 4 \quad 6 \\
 \quad 1 \quad 6 \quad 7 \quad 9 \quad 4 \\
 \quad 9 \quad 4 \quad 4 \quad 5 \quad 5 \\
 \quad 5 \quad 8 \quad 4 \quad 9 \quad 3 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 3. \quad 6 \quad 5 \quad 8 \quad 4 \quad 2 \\
 \quad 7 \quad 1 \quad 3 \quad 2 \quad 4 \\
 \quad 8 \quad 5 \quad 0 \quad 6 \quad 0 \\
 \quad 2 \quad 3 \quad 2 \quad 9 \quad 5 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2. \quad 3 \quad 5 \quad 9 \quad 7 \quad 2 \\
 \quad 2 \quad 3 \quad 0 \quad 8 \quad 9 \\
 \quad 6 \quad 6 \quad 7 \quad 7 \quad 8 \\
 \quad 2 \quad 7 \quad 8 \quad 1 \quad 4 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 4. \quad 3 \quad 6 \quad 8 \quad 7 \quad 5 \\
 \quad 5 \quad 6 \quad 8 \quad 4 \quad 6 \\
 \quad 7 \quad 0 \quad 8 \quad 0 \quad 5 \\
 \quad 6 \quad 7 \quad 4 \quad 3 \quad 7 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 5. \quad 4 \quad 2 \quad 3 \quad 2 \quad 7 \\
 \quad 1 \quad 5 \quad 7 \quad 3 \quad 6 \\
 \quad 3 \quad 6 \quad 5 \quad 4 \quad 3 \\
 \quad 7 \quad 4 \quad 1 \quad 5 \quad 9 \\
 \quad 2 \quad 4 \quad 7 \quad 8 \quad 8 \\
 \quad 0 \quad 0 \quad 5 \quad 2 \quad 0 \\
 \quad 5 \quad 6 \quad 0 \quad 6 \quad 2 \\
 \quad 5 \quad 7 \quad 9 \quad 9 \quad 5 \\
 \quad 3 \quad 9 \quad 1 \quad 5 \quad 5 \\
 \quad 6 \quad 2 \quad 5 \quad 3 \quad 3 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 6. \quad 1 \quad 4 \quad 3 \quad 2 \quad 5 \\
 \quad 4 \quad 6 \quad 1 \quad 1 \quad 1 \\
 \quad 5 \quad 1 \quad 4 \quad 8 \quad 0 \\
 \quad 8 \quad 9 \quad 6 \quad 4 \quad 9 \\
 \quad 3 \quad 8 \quad 8 \quad 6 \quad 8 \\
 \quad 3 \quad 7 \quad 2 \quad 3 \quad 8 \\
 \quad 5 \quad 3 \quad 1 \quad 9 \quad 7 \\
 \quad 7 \quad 2 \quad 9 \quad 5 \quad 6 \\
 \quad 3 \quad 4 \quad 3 \quad 7 \quad 4 \\
 \quad 2 \quad 8 \quad 4 \quad 3 \quad 3 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 7. \quad 5 \quad 4 \quad 2 \quad 5 \quad 8 \\
 \quad 4 \quad 6 \quad 3 \quad 4 \quad 7 \\
 \quad 2 \quad 3 \quad 5 \quad 1 \quad 5 \\
 \quad 8 \quad 7 \quad 0 \quad 3 \quad 3 \\
 \quad 2 \quad 9 \quad 8 \quad 3 \quad 6 \\
 \quad 4 \quad 5 \quad 1 \quad 2 \quad 7 \\
 \quad 2 \quad 0 \quad 1 \quad 8 \quad 0 \\
 \quad 4 \quad 5 \quad 7 \quad 9 \quad 4 \\
 \quad 3 \quad 3 \quad 9 \quad 6 \quad 9 \\
 \quad 2 \quad 4 \quad 3 \quad 4 \quad 2 \\
 \quad 1 \quad 3 \quad 4 \quad 3 \quad 8 \\
 \quad 7 \quad 6 \quad 6 \quad 5 \quad 7 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 8. \quad 1 \quad 3 \quad 7 \quad 5 \quad 6 \\
 \quad 6 \quad 6 \quad 3 \quad 0 \quad 3 \\
 \quad 3 \quad 5 \quad 2 \quad 4 \quad 8 \\
 \quad 5 \quad 7 \quad 6 \quad 6 \quad 1 \\
 \quad 4 \quad 0 \quad 9 \quad 3 \quad 1 \\
 \quad 9 \quad 3 \quad 0 \quad 3 \quad 3 \\
 \quad 3 \quad 6 \quad 1 \quad 9 \quad 5 \\
 \quad 6 \quad 5 \quad 8 \quad 9 \quad 2 \\
 \quad 6 \quad 3 \quad 4 \quad 1 \quad 9 \\
 \quad 4 \quad 2 \quad 6 \quad 8 \quad 0 \\
 \quad 7 \quad 8 \quad 5 \quad 5 \quad 1 \\
 \quad 1 \quad 8 \quad 2 \quad 5 \quad 5 \\
 \hline
 \end{array}$$

Add:

$$\begin{array}{r} 1. \quad 4 \quad 7 \quad 8 \quad 6 \quad 5 \\ \quad 7 \quad 9 \quad 5 \quad 4 \quad 6 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 6 \quad 8 \quad 3 \quad 9 \quad 9 \\ \quad 7 \quad 7 \quad 5 \quad 6 \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 5 \quad 6 \quad 8 \quad 7 \quad 9 \\ \quad 2 \quad 4 \quad 1 \quad 6 \quad 5 \\ \quad 9 \quad 3 \quad 6 \quad 5 \quad 6 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 6 \quad 9 \quad 5 \quad 3 \quad 4 \\ \quad 7 \quad 2 \quad 4 \quad 6 \quad 8 \\ \quad 4 \quad 7 \quad 6 \quad 2 \quad 5 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 5 \quad 2 \quad 8 \quad 4 \quad 7 \\ \quad 1 \quad 9 \quad 4 \quad 5 \quad 6 \\ \quad 4 \quad 3 \quad 7 \quad 1 \quad 2 \\ \quad 6 \quad 8 \quad 4 \quad 5 \quad 5 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 9 \quad 5 \quad 6 \quad 2 \quad 3 \\ \quad 7 \quad 3 \quad 3 \quad 8 \quad 2 \\ \quad 5 \quad 7 \quad 1 \quad 9 \quad 8 \\ \quad 2 \quad 6 \quad 8 \quad 7 \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 8 \quad 4 \quad 2 \quad 7 \quad 5 \\ \quad 2 \quad 5 \quad 3 \quad 8 \quad 4 \\ \quad 7 \quad 9 \quad 8 \quad 3 \quad 7 \\ \quad 2 \quad 9 \quad 3 \quad 8 \quad 6 \\ \quad 3 \quad 6 \quad 7 \quad 4 \quad 8 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 4 \quad 1 \quad 9 \quad 6 \quad 3 \\ \quad 2 \quad 5 \quad 1 \quad 4 \quad 6 \\ \quad 6 \quad 4 \quad 3 \quad 8 \quad 5 \\ \quad 5 \quad 1 \quad 9 \quad 2 \quad 7 \\ \quad 5 \quad 7 \quad 4 \quad 3 \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 8 \quad 5 \quad 9 \quad 4 \quad 3 \\ \quad 6 \quad 4 \quad 8 \quad 9 \quad 5 \\ \quad 3 \quad 2 \quad 4 \quad 1 \quad 9 \\ \quad 9 \quad 8 \quad 1 \quad 6 \quad 4 \\ \quad 1 \quad 7 \quad 6 \quad 4 \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 2 \quad 1 \quad 5 \quad 4 \quad 7 \\ \quad 8 \quad 3 \quad 4 \quad 7 \quad 1 \\ \quad 6 \quad 8 \quad 3 \quad 9 \quad 7 \\ \quad 2 \quad 8 \quad 6 \quad 5 \quad 8 \\ \quad 5 \quad 7 \quad 3 \quad 5 \quad 2 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 6 \quad 5 \quad 3 \quad 4 \quad 8 \\ \quad 5 \quad 8 \quad 4 \quad 1 \quad 3 \\ \quad 4 \quad 3 \quad 7 \quad 8 \quad 8 \\ \quad 6 \quad 3 \quad 3 \quad 5 \quad 4 \\ \quad 2 \quad 9 \quad 4 \quad 6 \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 1 \quad 2 \quad 7 \quad 4 \quad 9 \\ \quad 9 \quad 6 \quad 6 \quad 4 \quad 2 \\ \quad 5 \quad 9 \quad 2 \quad 6 \quad 6 \\ \quad 5 \quad 8 \quad 1 \quad 3 \quad 7 \\ \quad 4 \quad 2 \quad 7 \quad 5 \quad 8 \\ \hline \end{array}$$

Add:

1.	3	7	3	8	3
	2	6	7	7	6
	0	4	4	4	8
	7	3	2	0	0
	5	3	8	6	9
	5	6	2	5	9
	4	0	3	0	4
	1	9	3	2	4
	8	5	1	2	1
	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

2.	2	7	6	3	2
	8	6	1	2	6
	2	5	6	0	1
	7	3	2	1	1
	3	2	6	8	8
	6	8	5	9	4
	3	0	5	7	3
	0	9	4	5	7
	5	4	3	9	5
	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

Add 10 for a group of figures equal to 10.

3.	2	3	2	7	4
	5	7	3	6	6
	6	5	4	3	1
	4	1	5	9	9
	4	7	8	8	8
	0	5	2	0	7
	6	0	6	2	3
	7	9	9	5	2
	9	1	5	5	5
	2	5	3	3	8
	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

4.	2	5	2	3	1
	4	1	8	1	4
	8	0	4	9	5
	4	9	4	0	8
	6	8	6	6	3
	3	8	5	6	3
	9	7	3	7	5
	5	6	0	8	7
	7	3	2	2	3
	3	4	7	5	2
	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

5.	6	7	5	4	6
	7	2	4	5	5
	9	3	1	6	8
	3	9	7	4	7
	5	5	8	9	1
	4	8	6	9	2
	6	7	4	3	4
	8	3	9	7	9
	2	5	5	8	5
	7	6	3	6	5
	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>

6.	3	4	3	9	2
	7	8	8	9	5
	5	7	5	2	3
	6	2	8	6	4
	3	5	2	4	4
	1	9	5	5	7
	9	6	9	3	8
	8	3	4	2	3
	5	1	6	8	2
	4	8	3	7	5
	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>



Add:

1.	2	7	9	5	6
	0	3	9	2	5
	8	4	2	0	4
	7	2	0	3	2
	9	4	4	6	8
	6	0	5	9	7
	5	6	1	5	2
	4	6	7	2	0
	1	3	0	1	4
	8	7	3	7	9
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

2.	3	2	9	4	7
	5	3	3	5	5
	4	4	7	1	8
	0	1	4	8	3
	7	7	4	8	3
	6	5	8	0	4
	9	3	6	4	2
	5	5	3	6	7
	1	8	7	7	1
	8	8	2	9	5
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

3.	3	4	8	5	6
	2	7	4	6	8
	9	3	8	0	6
	1	3	7	4	2
	8	0	9	9	6
	5	7	2	1	8
	1	5	5	2	9
	4	6	5	7	3
	8	4	4	2	9
	2	5	8	4	6
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

4.	1	9	3	4	7
	0	3	3	7	5
	4	7	2	8	8
	9	6	7	5	4
	5	5	4	3	2
	6	5	6	7	9
	4	3	8	3	7
	8	2	9	6	1
	3	3	0	7	2
	5	1	5	0	8
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

5.	3	6	1	4	2
	1	8	7	6	0
	2	1	9	3	7
	6	1	9	8	3
	8	7	1	5	4
	2	9	4	5	7
	5	6	3	8	9
	1	8	6	5	7
	4	0	7	2	1
	6	2	2	7	5
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

6.	8	7	9	5	3
	5	4	4	3	7
	2	9	4	7	7
	7	1	0	5	8
	1	6	6	5	5
	2	5	8	4	2
	6	2	3	9	4
	2	1	5	3	4
	2	7	5	4	8
	8	4	2	3	1
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

Add:

1.	2	4	6	5	8
	7	8	3	9	6
	5	1	7	4	2
	8	9	4	6	7
	3	2	6	5	4
	2	7	1	3	5
	4	8	3	3	5
	2	5	4	9	0
	8	5	1	3	7
	<u>3</u>	<u>1</u>	<u>9</u>	<u>7</u>	<u>4</u>

2.	7	6	1	4	2
	5	8	9	3	7
	4	3	9	7	2
	6	8	3	4	1
	9	4	5	3	3
	2	7	4	6	7
	8	1	6	3	2
	6	7	2	7	4
	4	2	6	0	9
	<u>3</u>	<u>8</u>	<u>4</u>	<u>3</u>	<u>1</u>

3.	5	6	4	2	9
	2	8	5	7	4
	6	1	9	8	5
	8	7	6	2	3
	6	8	4	9	6
	3	2	1	4	6
	7	8	5	6	2
	6	4	3	1	8
	2	3	9	8	5
	<u>3</u>	<u>6</u>	<u>4</u>	<u>3</u>	<u>2</u>

4.	8	3	1	7	5
	7	5	3	2	8
	4	2	7	9	4
	1	9	8	4	6
	3	8	5	5	1
	8	1	4	6	3
	3	5	6	2	4
	2	3	2	8	6
	4	7	3	1	5
	<u>6</u>	<u>2</u>	<u>7</u>	<u>4</u>	<u>1</u>

5.	5	7	8	6	9
	6	9	7	4	9
	4	7	5	9	2
	8	5	6	5	9
	7	5	3	8	5
	2	7	5	9	3
	6	4	8	5	7
	9	2	3	5	8
	5	8	5	7	5
	<u>2</u>	<u>7</u>	<u>2</u>	<u>9</u>	<u>3</u>

6.	4	8	6	5	3
	6	8	3	8	9
	8	4	7	7	8
	7	4	3	6	5
	9	6	8	4	3
	8	7	6	9	7
	2	5	6	5	9
	6	8	4	6	4
	9	6	3	8	5
	<u>6</u>	<u>9</u>	<u>8</u>	<u>4</u>	<u>6</u>

- |             |           |           |           |
|-------------|-----------|-----------|-----------|
| 1. 4 less 2 | 2. 11 - 3 | 3. 12 - 4 | 4. 14 - 5 |
| 7 less 2    | 9 - 3     | 5 - 4     | 7 - 5     |
| 5 less 2    | 3 - 3     | 9 - 4     | 12 - 5    |
| 8 less 2    | 5 - 3     | 6 - 4     | 8 - 5     |
| 3 less 2    | 7 - 3     | 8 - 4     | 5 - 5     |
| 2 less 2    | 6 - 3     | 10 - 4    | 6 - 5     |
| 9 less 2    | 4 - 3     | 4 - 4     | 9 - 5     |
| 6 less 2    | 8 - 3     | 7 - 4     | 10 - 5    |
| 10 less 2   | 10 - 3    | 11 - 4    | 11 - 5    |
| 11 less 2   | 12 - 3    | 13 - 4    | 13 - 5    |

**Subtract :**

5.	<u>24</u> 2	<u>37</u> 2	<u>85</u> 2	<u>69</u> 2	<u>46</u> 2	<u>21</u> 2	<u>72</u> 2	<u>33</u> 2	<u>68</u> 2	<u>50</u> 2
6.	<u>54</u> 3	<u>67</u> 3	<u>55</u> 3	<u>49</u> 3	<u>76</u> 3	<u>31</u> 3	<u>92</u> 3	<u>83</u> 3	<u>58</u> 3	<u>70</u> 3
7.	<u>44</u> 4	<u>27</u> 4	<u>65</u> 4	<u>59</u> 4	<u>56</u> 4	<u>51</u> 4	<u>82</u> 4	<u>43</u> 4	<u>28</u> 4	<u>60</u> 4
8.	<u>94</u> 5	<u>87</u> 5	<u>25</u> 5	<u>89</u> 5	<u>36</u> 5	<u>41</u> 5	<u>62</u> 5	<u>53</u> 5	<u>78</u> 5	<u>80</u> 5
<hr/>										
9.	<u>80</u> 12	<u>87</u> 12	<u>82</u> 12	<u>85</u> 12	<u>88</u> 12	<u>83</u> 12	<u>89</u> 12	<u>86</u> 12	<u>81</u> 12	<u>84</u> 12
10.	<u>63</u> 13	<u>60</u> 13	<u>69</u> 13	<u>66</u> 13	<u>67</u> 13	<u>65</u> 13	<u>61</u> 13	<u>68</u> 13	<u>62</u> 13	<u>64</u> 13
11.	<u>55</u> 14	<u>58</u> 14	<u>51</u> 14	<u>54</u> 14	<u>59</u> 14	<u>57</u> 14	<u>53</u> 14	<u>56</u> 14	<u>50</u> 14	<u>52</u> 14
12.	<u>32</u> 15	<u>36</u> 15	<u>35</u> 15	<u>39</u> 15	<u>30</u> 15	<u>38</u> 15	<u>34</u> 15	<u>37</u> 15	<u>31</u> 15	<u>33</u> 15

1. 14 less 6	2. 15 - 7	3. 17 minus 8	4. 9 - 9
9 less 6	10 - 7	11 minus 8	12 - 9
11 less 6	7 - 7	16 minus 8	18 - 9
10 less 6	14 - 7	12 minus 8	10 - 9
8 less 6	9 - 7	9 minus 8	15 - 9
7 less 6	11 - 7	13 minus 8	11 - 9
12 less 6	13 - 7	14 minus 8	14 - 9
6 less 6	16 - 7	10 minus 8	16 - 9
13 less 6	8 - 7	8 minus 8	13 - 9
15 less 6	12 - 7	15 minus 8	17 - 9

**Subtract :**

5.	<u>24</u> 6	<u>37</u> 6	<u>85</u> 6	<u>69</u> 6	<u>46</u> 6	<u>21</u> 6	<u>72</u> 6	<u>33</u> 6	<u>68</u> 6	<u>50</u> 6
6.	<u>54</u> 7	<u>67</u> 7	<u>55</u> 7	<u>49</u> 7	<u>76</u> 7	<u>31</u> 7	<u>92</u> 7	<u>83</u> 7	<u>58</u> 7	<u>70</u> 7
7.	<u>44</u> 8	<u>27</u> 8	<u>65</u> 8	<u>59</u> 8	<u>56</u> 8	<u>51</u> 8	<u>82</u> 8	<u>43</u> 8	<u>28</u> 8	<u>60</u> 8
8.	<u>94</u> 9	<u>87</u> 9	<u>25</u> 9	<u>89</u> 9	<u>36</u> 9	<u>41</u> 9	<u>62</u> 9	<u>53</u> 9	<u>78</u> 9	<u>80</u> 9
<hr/>										
9.	<u>46</u> 16	<u>44</u> 16	<u>49</u> 16	<u>43</u> 16	<u>40</u> 16	<u>42</u> 16	<u>47</u> 16	<u>45</u> 16	<u>41</u> 16	<u>48</u> 16
10.	<u>74</u> 17	<u>70</u> 17	<u>79</u> 17	<u>72</u> 17	<u>76</u> 17	<u>78</u> 17	<u>75</u> 17	<u>71</u> 17	<u>77</u> 17	<u>73</u> 17
11.	<u>23</u> 18	<u>26</u> 18	<u>29</u> 18	<u>20</u> 18	<u>24</u> 18	<u>28</u> 18	<u>21</u> 18	<u>27</u> 18	<u>22</u> 18	<u>25</u> 18
12.	<u>96</u> 19	<u>92</u> 19	<u>99</u> 19	<u>95</u> 19	<u>90</u> 19	<u>98</u> 19	<u>94</u> 19	<u>91</u> 19	<u>93</u> 19	<u>97</u> 19

1.	$\begin{array}{r} 8 \\ \underline{2} \end{array}$	$\begin{array}{r} 9 \\ \underline{3} \end{array}$	$\begin{array}{r} 11 \\ \underline{4} \end{array}$	$\begin{array}{r} 17 \\ \underline{8} \end{array}$	$\begin{array}{r} 10 \\ \underline{6} \end{array}$	$\begin{array}{r} 15 \\ \underline{5} \end{array}$	$\begin{array}{r} 12 \\ \underline{3} \end{array}$	$\begin{array}{r} 9 \\ \underline{5} \end{array}$	$\begin{array}{r} 14 \\ \underline{3} \end{array}$	$\begin{array}{r} 7 \\ \underline{2} \end{array}$
2.	$\begin{array}{r} 16 \\ \underline{5} \end{array}$	$\begin{array}{r} 10 \\ \underline{4} \end{array}$	$\begin{array}{r} 18 \\ \underline{7} \end{array}$	$\begin{array}{r} 12 \\ \underline{5} \end{array}$	$\begin{array}{r} 19 \\ \underline{3} \end{array}$	$\begin{array}{r} 8 \\ \underline{5} \end{array}$	$\begin{array}{r} 11 \\ \underline{2} \end{array}$	$\begin{array}{r} 14 \\ \underline{6} \end{array}$	$\begin{array}{r} 15 \\ \underline{4} \end{array}$	$\begin{array}{r} 8 \\ \underline{4} \end{array}$
3.	$\begin{array}{r} 14 \\ \underline{7} \end{array}$	$\begin{array}{r} 12 \\ \underline{7} \end{array}$	$\begin{array}{r} 13 \\ \underline{6} \end{array}$	$\begin{array}{r} 10 \\ \underline{5} \end{array}$	$\begin{array}{r} 16 \\ \underline{9} \end{array}$	$\begin{array}{r} 15 \\ \underline{6} \end{array}$	$\begin{array}{r} 14 \\ \underline{8} \end{array}$	$\begin{array}{r} 11 \\ \underline{5} \end{array}$	$\begin{array}{r} 13 \\ \underline{2} \end{array}$	$\begin{array}{r} 18 \\ \underline{3} \end{array}$
4.	$\begin{array}{r} 11 \\ \underline{10} \end{array}$	$\begin{array}{r} 15 \\ \underline{10} \end{array}$	$\begin{array}{r} 19 \\ \underline{10} \end{array}$	$\begin{array}{r} 10 \\ \underline{10} \end{array}$	$\begin{array}{r} 12 \\ \underline{10} \end{array}$	$\begin{array}{r} 18 \\ \underline{10} \end{array}$	$\begin{array}{r} 16 \\ \underline{10} \end{array}$	$\begin{array}{r} 13 \\ \underline{10} \end{array}$	$\begin{array}{r} 17 \\ \underline{10} \end{array}$	$\begin{array}{r} 14 \\ \underline{10} \end{array}$

Think of 9 as 10 less 1.

5.	$32 - 9$	6.	$55 - 9$
	$36 - 9$		$51 - 9$
	$33 - 9$		$54 - 9$
	$39 - 9$		$58 - 9$
	$35 - 9$		$52 - 9$
	$30 - 9$		$50 - 9$
	$34 - 9$		$57 - 9$
	$37 - 9$		$53 - 9$
	$31 - 9$		$56 - 9$
	$38 - 9$		$59 - 9$

Think of 11 as 10 plus 1.

7.	$72 - 11$	8.	$45 - 11$
	$76 - 11$		$41 - 11$
	$73 - 11$		$44 - 11$
	$79 - 11$		$48 - 11$
	$75 - 11$		$42 - 11$
	$70 - 11$		$47 - 11$
	$74 - 11$		$40 - 11$
	$77 - 11$		$43 - 11$
	$71 - 11$		$46 - 11$
	$78 - 11$		$49 - 11$

Subtract :

9.	$\begin{array}{r} 45 \\ \underline{31} \end{array}$	$\begin{array}{r} 38 \\ \underline{24} \end{array}$	$\begin{array}{r} 86 \\ \underline{55} \end{array}$	$\begin{array}{r} 72 \\ \underline{30} \end{array}$	$\begin{array}{r} 55 \\ \underline{14} \end{array}$	$\begin{array}{r} 77 \\ \underline{46} \end{array}$	$\begin{array}{r} 94 \\ \underline{71} \end{array}$	$\begin{array}{r} 65 \\ \underline{23} \end{array}$	$\begin{array}{r} 89 \\ \underline{27} \end{array}$	$\begin{array}{r} 54 \\ \underline{32} \end{array}$
10.	$\begin{array}{r} 29 \\ \underline{22} \end{array}$	$\begin{array}{r} 37 \\ \underline{16} \end{array}$	$\begin{array}{r} 48 \\ \underline{27} \end{array}$	$\begin{array}{r} 56 \\ \underline{34} \end{array}$	$\begin{array}{r} 65 \\ \underline{42} \end{array}$	$\begin{array}{r} 74 \\ \underline{51} \end{array}$	$\begin{array}{r} 89 \\ \underline{75} \end{array}$	$\begin{array}{r} 98 \\ \underline{26} \end{array}$	$\begin{array}{r} 66 \\ \underline{35} \end{array}$	$\begin{array}{r} 57 \\ \underline{46} \end{array}$
11.	$\begin{array}{r} 35 \\ \underline{28} \end{array}$	$\begin{array}{r} 54 \\ \underline{45} \end{array}$	$\begin{array}{r} 63 \\ \underline{45} \end{array}$	$\begin{array}{r} 82 \\ \underline{36} \end{array}$	$\begin{array}{r} 76 \\ \underline{48} \end{array}$	$\begin{array}{r} 90 \\ \underline{27} \end{array}$	$\begin{array}{r} 43 \\ \underline{26} \end{array}$	$\begin{array}{r} 51 \\ \underline{33} \end{array}$	$\begin{array}{r} 64 \\ \underline{45} \end{array}$	$\begin{array}{r} 72 \\ \underline{54} \end{array}$
12.	$\begin{array}{r} 70 \\ \underline{35} \end{array}$	$\begin{array}{r} 40 \\ \underline{24} \end{array}$	$\begin{array}{r} 30 \\ \underline{16} \end{array}$	$\begin{array}{r} 80 \\ \underline{52} \end{array}$	$\begin{array}{r} 90 \\ \underline{67} \end{array}$	$\begin{array}{r} 60 \\ \underline{38} \end{array}$	$\begin{array}{r} 50 \\ \underline{21} \end{array}$	$\begin{array}{r} 70 \\ \underline{49} \end{array}$	$\begin{array}{r} 80 \\ \underline{33} \end{array}$	$\begin{array}{r} 60 \\ \underline{26} \end{array}$

## Drill for Rapidity.

- |           |           |           |            |
|-----------|-----------|-----------|------------|
| 1. 12 - 4 | 4. 87 - 9 | 7. 76 - 4 | 10. 33 - 5 |
| 33 - 2    | 13 - 7    | 88 - 7    | 64 - 3     |
| 26 - 3    | 72 - 2    | 15 - 2    | 95 - 6     |
| 40 - 7    | 63 - 4    | 32 - 5    | 56 - 9     |
| 58 - 9    | 41 - 5    | 94 - 8    | 20 - 3     |
| 62 - 6    | 36 - 7    | 78 - 3    | 83 - 4     |
| 19 - 5    | 98 - 6    | 25 - 6    | 74 - 6     |
| 64 - 2    | 27 - 3    | 47 - 4    | 36 - 2     |
| 96 - 8    | 95 - 9    | 81 - 3    | 71 - 5     |
| 71 - 4    | 57 - 7    | 48 - 8    | 92 - 9     |
| 2. 24 - 9 | 5. 65 - 4 | 8. 70 - 7 | 11. 63 - 2 |
| 55 - 8    | 17 - 8    | 93 - 9    | 40 - 4     |
| 89 - 5    | 30 - 2    | 54 - 3    | 35 - 5     |
| 35 - 6    | 66 - 8    | 11 - 7    | 68 - 7     |
| 73 - 3    | 72 - 5    | 38 - 5    | 17 - 8     |
| 29 - 7    | 31 - 9    | 74 - 2    | 96 - 4     |
| 60 - 5    | 45 - 5    | 21 - 6    | 52 - 3     |
| 44 - 4    | 97 - 6    | 43 - 7    | 34 - 10    |
| 83 - 6    | 18 - 7    | 84 - 5    | 80 - 6     |
| 50 - 8    | 56 - 4    | 46 - 7    | 15 - 7     |
| 3. 16 - 6 | 6. 69 - 2 | 9. 91 - 8 | 12. 78 - 5 |
| 39 - 9    | 37 - 5    | 79 - 3    | 44 - 9     |
| 86 - 5    | 80 - 6    | 28 - 4    | 55 - 3     |
| 99 - 4    | 92 - 7    | 49 - 8    | 39 - 4     |
| 20 - 9    | 23 - 8    | 53 - 4    | 72 - 10    |
| 61 - 2    | 68 - 2    | 77 - 2    | 41 - 5     |
| 52 - 8    | 42 - 7    | 51 - 5    | 54 - 6     |
| 67 - 3    | 34 - 3    | 85 - 3    | 93 - 9     |
| 22 - 5    | 82 - 4    | 59 - 6    | 65 - 6     |
| 90 - 3    | 75 - 7    | 14 - 9    | 24 - 7     |

## WHOLE NUMBERS SUBTRACTION

Practice first for accuracy, then for speed.

1. Starting at 24 subtract 2's until but 2 is left.
  4. Starting at 36 subtract 3's until but 3 is left.
  3. Starting at 48 subtract 4's until but 4 is left.
  4. Starting at 60 subtract 5's until but 5 is left.
  5. Starting at 72 subtract 6's until but 6 is left.
  6. Starting at 84 subtract 7's until nothing is left.
  7. Starting at 96 subtract 8's until nothing is left.
  8. Starting at 108 subtract 9's until nothing is left.
  9. Starting at 120 subtract 10's until nothing is left.
  10. Starting at 132 subtract 11's until nothing is left.
- 

1. Starting at 50 subtract 2's until you reach zero.
  2. Starting at 60 subtract 3's until you reach zero.
  3. Starting at 80 subtract 4's until you reach zero.
  4. Starting at 100 subtract 5's until you reach zero.
  5. Starting at 102 subtract 6's until you reach zero.
  6. Starting at 105 subtract 7's until you reach zero.
  7. Starting at 104 subtract 8's until you reach zero.
  8. Starting at 200 subtract 10's until you reach zero.
- 

1. Starting at 100 subtract 3 as many times as you can.
2. Starting at 100 subtract 6 as many times as you can.
3. Starting at 100 subtract 7 as many times as you can.
4. Starting at 100 subtract 8 as many times as you can.
5. Starting at 100 subtract 9 as many times as you can.
6. Starting at 100 subtract 11 as many times as you can.
7. Starting at 100 subtract 12 as many times as you can.
8. Starting at 90 subtract 4 as many times as you can.
9. Starting at 99 subtract 5 as many times as you can.

## Drill for Rapidity.

- |            |             |            |              |
|------------|-------------|------------|--------------|
| 1. $5 + 2$ | 4. $7 - 2$  | 7. $3 + 4$ | 10. $14 - 6$ |
| $7 + 3$    | $6 - 3$     | $7 + 5$    | $16 - 9$     |
| $9 + 5$    | $10 - 4$    | $8 + 3$    | $12 - 7$     |
| $6 + 6$    | $9 - 5$     | $6 + 2$    | $13 - 6$     |
| $4 + 8$    | $11 - 9$    | $5 + 8$    | $6 - 2$      |
| $2 + 9$    | $12 - 8$    | $4 + 9$    | $8 - 4$      |
| $8 + 4$    | $10 - 7$    | $3 + 6$    | $13 - 5$     |
| $5 + 5$    | $12 - 6$    | $5 + 7$    | $9 - 3$      |
| $8 + 7$    | $9 - 4$     | $6 + 4$    | $11 - 6$     |
| $5 + 6$    | $11 - 5$    | $9 + 2$    | $5 - 2$      |
| 2. $9 + 9$ | 5. $11 - 8$ | 8. $4 + 5$ | 11. $14 - 7$ |
| $2 + 4$    | $15 - 9$    | $3 + 3$    | $8 - 3$      |
| $6 + 3$    | $7 - 6$     | $9 + 8$    | $17 - 8$     |
| $7 + 8$    | $8 - 5$     | $6 + 7$    | $7 - 4$      |
| $3 + 9$    | $9 - 2$     | $5 + 9$    | $14 - 9$     |
| $8 + 6$    | $7 - 3$     | $7 + 6$    | $7 - 5$      |
| $3 + 2$    | $12 - 9$    | $4 + 2$    | $8 - 6$      |
| $5 + 3$    | $14 - 8$    | $5 + 4$    | $13 - 8$     |
| $9 + 4$    | $11 - 7$    | $8 + 5$    | $18 - 9$     |
| $2 + 7$    | $10 - 6$    | $4 + 3$    | $15 - 7$     |
| 3. $6 + 9$ | 6. $12 - 5$ | 9. $8 + 8$ | 12. $12 - 4$ |
| $7 + 7$    | $11 - 3$    | $7 + 9$    | $11 - 2$     |
| $8 + 2$    | $8 - 2$     | $3 + 7$    | $14 - 5$     |
| $9 + 3$    | $9 - 6$     | $9 + 6$    | $5 - 3$      |
| $4 + 4$    | $16 - 8$    | $7 + 4$    | $15 - 8$     |
| $6 + 5$    | $13 - 7$    | $2 + 5$    | $13 - 4$     |
| $2 + 6$    | $10 - 2$    | $6 + 6$    | $10 - 3$     |
| $4 + 7$    | $12 - 3$    | $9 + 7$    | $11 - 4$     |
| $8 + 9$    | $6 - 4$     | $3 + 8$    | $13 - 9$     |
| $7 + 2$    | $10 - 5$    | $6 + 8$    | $15 - 6$     |



Add, *and* subtract :

1.	40	60	80	70	90	20	30	50
	<u>30</u>	<u>20</u>	<u>10</u>	<u>50</u>	<u>60</u>	<u>10</u>	<u>20</u>	<u>20</u>
2.	60	50	70	40	80	30	90	70
	<u>30</u>	<u>40</u>	<u>70</u>	<u>20</u>	<u>60</u>	<u>10</u>	<u>50</u>	<u>40</u>
3.	90	80	60	50	70	40	80	60
	<u>30</u>	<u>50</u>	<u>10</u>	<u>30</u>	<u>20</u>	<u>10</u>	<u>30</u>	<u>40</u>
4.	90	80	70	60	90	80	70	90
	<u>40</u>	<u>40</u>	<u>30</u>	<u>50</u>	<u>20</u>	<u>20</u>	<u>60</u>	<u>70</u>

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5.	110	120	170	150	140	180	160	190
	<u>90</u>	<u>80</u>	<u>70</u>	<u>60</u>	<u>50</u>	<u>40</u>	<u>30</u>	<u>20</u>
6.	260	210	240	290	220	270	230	250
	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>	<u>60</u>	<u>80</u>	<u>70</u>	<u>90</u>
7.	350	320	390	360	330	380	340	370
	<u>20</u>	<u>70</u>	<u>40</u>	<u>80</u>	<u>60</u>	<u>50</u>	<u>90</u>	<u>30</u>
8.	520	640	720	840	750	930	630	410
	<u>30</u>	<u>50</u>	<u>90</u>	<u>50</u>	<u>70</u>	<u>40</u>	<u>80</u>	<u>60</u>

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9.	260	540	360	750	420	350	300	600
	<u>110</u>	<u>420</u>	<u>240</u>	<u>500</u>	<u>120</u>	<u>220</u>	<u>150</u>	<u>250</u>
10.	320	310	400	560	220	800	240	250
	<u>200</u>	<u>160</u>	<u>380</u>	<u>480</u>	<u>190</u>	<u>250</u>	<u>180</u>	<u>160</u>
11.	280	200	300	400	500	600	700	800
	<u>140</u>	<u>130</u>	<u>210</u>	<u>280</u>	<u>340</u>	<u>480</u>	<u>150</u>	<u>720</u>
12.	290	660	430	590	810	550	350	750
	<u>150</u>	<u>200</u>	<u>100</u>	<u>300</u>	<u>600</u>	<u>150</u>	<u>250</u>	<u>350</u>

1. Count by 2's to 20, and back by 2's to 2.
  2. Count by 3's to 30, and back by 3's to 3.
  3. Count by 4's to 40, and back by 4's to 4.
  4. Count by 5's to 50, and back by 5's to 5.
  5. Count by 6's to 60, and back by 6's to 6.
  6. Count by 7's to 70, and back by 7's to 7.
  7. Count by 8's to 80, and back by 8's to 8.
  8. Count by 9's to 90, and back by 9's to 9.
- 

9. Count by 3's to 60. Count back to 3.
  10. Count by 4's to 80. Count back to 4.
  11. Count by 6's to 120. Count back to 6.
  12. Count by 7's to 140. Count back to 7.
  13. Count by 8's to 160. Count back to 8.
  14. Count by 9's to 180. Count back to 9.
  15. Count by 11's to 220. Count back to 11.
  16. Count by 12's to 240. Count back to 12.
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17. Count by 13's to 169. How many 13's in 169?
18. Count by 15's to 225. How many 15's in 225?
19. Count by 16's to 256. How many 16's in 256?
20. Count by 20's to 400. How many 20's in 400?
21. Count by 25's to 625. How many 25's in 625?
22. What is meant by the "square" of a number?
23. What is the square of 13? Of 15? Of 16? Of 20? Of 25?

Recite the table of 2's.

4.	$\frac{11}{2}$	$\frac{21}{2}$	$\frac{31}{2}$	$\frac{41}{2}$	$\frac{51}{2}$	$\frac{61}{2}$	$\frac{71}{2}$	$\frac{81}{2}$	$\frac{91}{2}$
5.	$\frac{12}{2}$	$\frac{22}{2}$	$\frac{32}{2}$	$\frac{42}{2}$	$\frac{52}{2}$	$\frac{62}{2}$	$\frac{72}{2}$	$\frac{82}{2}$	$\frac{92}{2}$
6.	$\frac{13}{2}$	$\frac{23}{2}$	$\frac{33}{2}$	$\frac{43}{2}$	$\frac{53}{2}$	$\frac{63}{2}$	$\frac{73}{2}$	$\frac{83}{2}$	$\frac{93}{2}$
7.	$\frac{14}{2}$	$\frac{24}{2}$	$\frac{34}{2}$	$\frac{44}{2}$	$\frac{54}{2}$	$\frac{64}{2}$	$\frac{74}{2}$	$\frac{84}{2}$	$\frac{94}{2}$
8.	$\frac{15}{2}$	$\frac{25}{2}$	$\frac{35}{2}$	$\frac{45}{2}$	$\frac{55}{2}$	$\frac{65}{2}$	$\frac{75}{2}$	$\frac{85}{2}$	$\frac{95}{2}$
<hr/>									
9.	$\frac{16}{2}$	$\frac{26}{2}$	$\frac{36}{2}$	$\frac{46}{2}$	$\frac{56}{2}$	$\frac{66}{2}$	$\frac{76}{2}$	$\frac{86}{2}$	$\frac{96}{2}$
10.	$\frac{17}{2}$	$\frac{27}{2}$	$\frac{37}{2}$	$\frac{47}{2}$	$\frac{57}{2}$	$\frac{67}{2}$	$\frac{77}{2}$	$\frac{87}{2}$	$\frac{97}{2}$
11.	$\frac{18}{2}$	$\frac{28}{2}$	$\frac{38}{2}$	$\frac{48}{2}$	$\frac{58}{2}$	$\frac{68}{2}$	$\frac{78}{2}$	$\frac{88}{2}$	$\frac{98}{2}$
12.	$\frac{19}{2}$	$\frac{29}{2}$	$\frac{39}{2}$	$\frac{49}{2}$	$\frac{59}{2}$	$\frac{69}{2}$	$\frac{79}{2}$	$\frac{89}{2}$	$\frac{99}{2}$



- |       |                |                |                |                |                |                |                |                |                |
|-------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 4.    | $\frac{11}{4}$ | $\frac{21}{4}$ | $\frac{31}{4}$ | $\frac{41}{4}$ | $\frac{51}{4}$ | $\frac{61}{4}$ | $\frac{71}{4}$ | $\frac{81}{4}$ | $\frac{91}{4}$ |
| 5.    | $\frac{12}{4}$ | $\frac{22}{4}$ | $\frac{32}{4}$ | $\frac{42}{4}$ | $\frac{52}{4}$ | $\frac{62}{4}$ | $\frac{72}{4}$ | $\frac{82}{4}$ | $\frac{92}{4}$ |
| 6.    | $\frac{13}{4}$ | $\frac{23}{4}$ | $\frac{33}{4}$ | $\frac{43}{4}$ | $\frac{53}{4}$ | $\frac{63}{4}$ | $\frac{73}{4}$ | $\frac{83}{4}$ | $\frac{93}{4}$ |
| 7.    | $\frac{14}{4}$ | $\frac{24}{4}$ | $\frac{34}{4}$ | $\frac{44}{4}$ | $\frac{54}{4}$ | $\frac{64}{4}$ | $\frac{74}{4}$ | $\frac{84}{4}$ | $\frac{94}{4}$ |
| 8.    | $\frac{15}{4}$ | $\frac{25}{4}$ | $\frac{35}{4}$ | $\frac{45}{4}$ | $\frac{55}{4}$ | $\frac{65}{4}$ | $\frac{75}{4}$ | $\frac{85}{4}$ | $\frac{95}{4}$ |
| <hr/> |                |                |                |                |                |                |                |                |                |
| 9.    | $\frac{16}{4}$ | $\frac{26}{4}$ | $\frac{36}{4}$ | $\frac{46}{4}$ | $\frac{56}{4}$ | $\frac{66}{4}$ | $\frac{76}{4}$ | $\frac{86}{4}$ | $\frac{96}{4}$ |
| 10.   | $\frac{17}{4}$ | $\frac{27}{4}$ | $\frac{37}{4}$ | $\frac{47}{4}$ | $\frac{57}{4}$ | $\frac{67}{4}$ | $\frac{77}{4}$ | $\frac{87}{4}$ | $\frac{97}{4}$ |
| 11.   | $\frac{18}{4}$ | $\frac{28}{4}$ | $\frac{38}{4}$ | $\frac{48}{4}$ | $\frac{58}{4}$ | $\frac{68}{4}$ | $\frac{78}{4}$ | $\frac{88}{4}$ | $\frac{98}{4}$ |
| 12.   | $\frac{19}{4}$ | $\frac{29}{4}$ | $\frac{39}{4}$ | $\frac{49}{4}$ | $\frac{59}{4}$ | $\frac{69}{4}$ | $\frac{79}{4}$ | $\frac{89}{4}$ | $\frac{99}{4}$ |



1.	$\begin{array}{r} 8 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 9 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 7 \\ 2 \\ \hline \end{array}$
2.	$\begin{array}{r} 16 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 19 \\ 3 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ 4 \\ \hline \end{array}$	$\begin{array}{r} 8 \\ 4 \\ \hline \end{array}$
3.	$\begin{array}{r} 14 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 7 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ 9 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ 8 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ 5 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 2 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ 3 \\ \hline \end{array}$
4.	$\begin{array}{r} 11 \\ 10 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ 10 \\ \hline \end{array}$	$\begin{array}{r} 19 \\ 10 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ 10 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ 10 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ 10 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ 10 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ 10 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ 10 \\ \hline \end{array}$	$\begin{array}{r} 14 \\ 10 \\ \hline \end{array}$

Think of 9 as 10 less 1.

5.	$32 - 9$	6.	$55 - 9$
	$36 - 9$		$51 - 9$
	$33 - 9$		$54 - 9$
	$39 - 9$		$58 - 9$
	$35 - 9$		$52 - 9$
	$30 - 9$		$50 - 9$
	$34 - 9$		$57 - 9$
	$37 - 9$		$53 - 9$
	$31 - 9$		$56 - 9$
	$38 - 9$		$59 - 9$

Think of 11 as 10 plus 1.

7.	$72 - 11$	8.	$45 - 11$
	$76 - 11$		$41 - 11$
	$73 - 11$		$44 - 11$
	$79 - 11$		$48 - 11$
	$75 - 11$		$42 - 11$
	$70 - 11$		$47 - 11$
	$74 - 11$		$40 - 11$
	$77 - 11$		$43 - 11$
	$71 - 11$		$46 - 11$
	$78 - 11$		$49 - 11$

Subtract:

9.	$\begin{array}{r} 45 \\ 31 \\ \hline \end{array}$	$\begin{array}{r} 38 \\ 24 \\ \hline \end{array}$	$\begin{array}{r} 86 \\ 55 \\ \hline \end{array}$	$\begin{array}{r} 72 \\ 30 \\ \hline \end{array}$	$\begin{array}{r} 55 \\ 14 \\ \hline \end{array}$	$\begin{array}{r} 77 \\ 46 \\ \hline \end{array}$	$\begin{array}{r} 94 \\ 71 \\ \hline \end{array}$	$\begin{array}{r} 65 \\ 23 \\ \hline \end{array}$	$\begin{array}{r} 89 \\ 27 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ 32 \\ \hline \end{array}$
10.	$\begin{array}{r} 29 \\ 22 \\ \hline \end{array}$	$\begin{array}{r} 37 \\ 16 \\ \hline \end{array}$	$\begin{array}{r} 48 \\ 27 \\ \hline \end{array}$	$\begin{array}{r} 56 \\ 34 \\ \hline \end{array}$	$\begin{array}{r} 65 \\ 42 \\ \hline \end{array}$	$\begin{array}{r} 74 \\ 51 \\ \hline \end{array}$	$\begin{array}{r} 89 \\ 75 \\ \hline \end{array}$	$\begin{array}{r} 98 \\ 26 \\ \hline \end{array}$	$\begin{array}{r} 66 \\ 35 \\ \hline \end{array}$	$\begin{array}{r} 57 \\ 46 \\ \hline \end{array}$
11.	$\begin{array}{r} 35 \\ 28 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ 45 \\ \hline \end{array}$	$\begin{array}{r} 63 \\ 45 \\ \hline \end{array}$	$\begin{array}{r} 82 \\ 36 \\ \hline \end{array}$	$\begin{array}{r} 76 \\ 48 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ 27 \\ \hline \end{array}$	$\begin{array}{r} 43 \\ 26 \\ \hline \end{array}$	$\begin{array}{r} 51 \\ 33 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ 45 \\ \hline \end{array}$	$\begin{array}{r} 72 \\ 54 \\ \hline \end{array}$
12.	$\begin{array}{r} 70 \\ 35 \\ \hline \end{array}$	$\begin{array}{r} 40 \\ 24 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ 16 \\ \hline \end{array}$	$\begin{array}{r} 80 \\ 52 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ 67 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ 38 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ 21 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ 49 \\ \hline \end{array}$	$\begin{array}{r} 80 \\ 33 \\ \hline \end{array}$	$\begin{array}{r} 60 \\ 26 \\ \hline \end{array}$

## Drill for Rapidity.

- |           |           |           |            |
|-----------|-----------|-----------|------------|
| 1. 12 - 4 | 4. 87 - 9 | 7. 76 - 4 | 10. 33 - 5 |
| 33 - 2    | 13 - 7    | 88 - 7    | 64 - 3     |
| 26 - 3    | 72 - 2    | 15 - 2    | 95 - 6     |
| 40 - 7    | 63 - 4    | 32 - 5    | 56 - 9     |
| 58 - 9    | 41 - 5    | 94 - 8    | 20 - 3     |
| 62 - 6    | 36 - 7    | 78 - 3    | 83 - 4     |
| 19 - 5    | 98 - 6    | 25 - 6    | 74 - 6     |
| 64 - 2    | 27 - 3    | 47 - 4    | 36 - 2     |
| 96 - 8    | 95 - 9    | 81 - 3    | 71 - 5     |
| 71 - 4    | 57 - 7    | 48 - 8    | 92 - 9     |
| 2. 24 - 9 | 5. 65 - 4 | 8. 70 - 7 | 11. 63 - 2 |
| 55 - 8    | 17 - 8    | 93 - 9    | 40 - 4     |
| 89 - 5    | 30 - 2    | 54 - 3    | 35 - 5     |
| 35 - 6    | 66 - 8    | 11 - 7    | 68 - 7     |
| 73 - 3    | 72 - 5    | 38 - 5    | 17 - 8     |
| 29 - 7    | 31 - 9    | 74 - 2    | 96 - 4     |
| 60 - 5    | 45 - 5    | 21 - 6    | 52 - 3     |
| 44 - 4    | 97 - 6    | 43 - 7    | 34 - 10    |
| 83 - 6    | 18 - 7    | 84 - 5    | 80 - 6     |
| 50 - 8    | 56 - 4    | 46 - 7    | 15 - 7     |
| 3. 16 - 6 | 6. 69 - 2 | 9. 91 - 8 | 12. 78 - 5 |
| 39 - 9    | 37 - 5    | 79 - 3    | 44 - 9     |
| 86 - 5    | 80 - 6    | 28 - 4    | 55 - 3     |
| 99 - 4    | 92 - 7    | 49 - 8    | 39 - 4     |
| 20 - 9    | 23 - 8    | 53 - 4    | 72 - 10    |
| 61 - 2    | 68 - 2    | 77 - 2    | 41 - 5     |
| 52 - 8    | 42 - 7    | 51 - 5    | 54 - 6     |
| 67 - 3    | 34 - 3    | 85 - 3    | 93 - 9     |
| 22 - 5    | 82 - 4    | 59 - 6    | 65 - 6     |
| 90 - 3    | 75 - 7    | 14 - 9    | 24 - 7     |



Practice first for **accuracy**, then for **speed**.

1. Starting at 24 subtract 2's until but 2 is left.
  2. Starting at 36 subtract 3's until but 3 is left.
  3. Starting at 48 subtract 4's until but 4 is left.
  4. Starting at 60 subtract 5's until but 5 is left.
  5. Starting at 72 subtract 6's until but 6 is left.
  6. Starting at 84 subtract 7's until nothing is left.
  7. Starting at 96 subtract 8's until nothing is left.
  8. Starting at 108 subtract 9's until nothing is left.
  9. Starting at 120 subtract 10's until nothing is left.
  10. Starting at 132 subtract 11's until nothing is left.
- 

1. Starting at 50 subtract 2's until you reach zero.
  2. Starting at 60 subtract 3's until you reach zero.
  3. Starting at 80 subtract 4's until you reach zero.
  4. Starting at 100 subtract 5's until you reach zero.
  5. Starting at 102 subtract 6's until you reach zero.
  6. Starting at 105 subtract 7's until you reach zero.
  7. Starting at 104 subtract 8's until you reach zero.
  8. Starting at 200 subtract 10's until you reach zero.
- 

1. Starting at 100 subtract 3 as many times as you can.
2. Starting at 100 subtract 6 as many times as you can.
3. Starting at 100 subtract 7 as many times as you can.
4. Starting at 100 subtract 8 as many times as you can.
5. Starting at 100 subtract 9 as many times as you can.
6. Starting at 100 subtract 11 as many times as you can.
7. Starting at 100 subtract 12 as many times as you can.
8. Starting at 90 subtract 4 as many times as you can.
9. Starting at 99 subtract 5 as many times as you can.

## Drill for Rapidity.

- |            |             |            |              |
|------------|-------------|------------|--------------|
| 1. $5 + 2$ | 4. $7 - 2$  | 7. $3 + 4$ | 10. $14 - 6$ |
| $7 + 3$    | $6 - 3$     | $7 + 5$    | $16 - 9$     |
| $9 + 5$    | $10 - 4$    | $8 + 3$    | $12 - 7$     |
| $6 + 6$    | $9 - 5$     | $6 + 2$    | $13 - 6$     |
| $4 + 8$    | $11 - 9$    | $5 + 8$    | $6 - 2$      |
| $2 + 9$    | $12 - 8$    | $4 + 9$    | $8 - 4$      |
| $8 + 4$    | $10 - 7$    | $3 + 6$    | $13 - 5$     |
| $5 + 5$    | $12 - 6$    | $5 + 7$    | $9 - 3$      |
| $8 + 7$    | $9 - 4$     | $6 + 4$    | $11 - 6$     |
| $5 + 6$    | $11 - 5$    | $9 + 2$    | $5 - 2$      |
| 2. $9 + 9$ | 5. $11 - 8$ | 8. $4 + 5$ | 11. $14 - 7$ |
| $2 + 4$    | $15 - 9$    | $3 + 3$    | $8 - 3$      |
| $6 + 3$    | $7 - 6$     | $9 + 8$    | $17 - 8$     |
| $7 + 8$    | $8 - 5$     | $6 + 7$    | $7 - 4$      |
| $3 + 9$    | $9 - 2$     | $5 + 9$    | $14 - 9$     |
| $8 + 6$    | $7 - 3$     | $7 + 6$    | $7 - 5$      |
| $3 + 2$    | $12 - 9$    | $4 + 2$    | $8 - 6$      |
| $5 + 3$    | $14 - 8$    | $5 + 4$    | $13 - 8$     |
| $9 + 4$    | $11 - 7$    | $8 + 5$    | $18 - 9$     |
| $2 + 7$    | $10 - 6$    | $4 + 3$    | $15 - 7$     |
| 3. $6 + 9$ | 6. $12 - 5$ | 9. $8 + 8$ | 12. $12 - 4$ |
| $7 + 7$    | $11 - 3$    | $7 + 9$    | $11 - 2$     |
| $8 + 2$    | $8 - 2$     | $3 + 7$    | $14 - 5$     |
| $9 + 3$    | $9 - 6$     | $9 + 6$    | $5 - 3$      |
| $4 + 4$    | $16 - 8$    | $7 + 4$    | $15 - 8$     |
| $6 + 5$    | $13 - 7$    | $2 + 5$    | $13 - 4$     |
| $2 + 6$    | $10 - 2$    | $6 + 6$    | $10 - 3$     |
| $4 + 7$    | $12 - 3$    | $9 + 7$    | $11 - 4$     |
| $8 + 9$    | $6 - 4$     | $3 + 8$    | $13 - 9$     |
| $7 + 2$    | $10 - 5$    | $6 + 8$    | $15 - 6$     |

Add, *and* subtract :

1.	40	60	80	70	90	20	30	50
	<u>30</u>	<u>20</u>	<u>10</u>	<u>50</u>	<u>60</u>	<u>10</u>	<u>20</u>	<u>20</u>
2.	60	50	70	40	80	30	90	70
	<u>30</u>	<u>40</u>	<u>70</u>	<u>20</u>	<u>60</u>	<u>10</u>	<u>50</u>	<u>40</u>
3.	90	80	60	50	70	40	80	60
	<u>30</u>	<u>50</u>	<u>10</u>	<u>30</u>	<u>20</u>	<u>10</u>	<u>30</u>	<u>40</u>
4.	90	80	70	60	90	80	70	90
	<u>40</u>	<u>40</u>	<u>30</u>	<u>50</u>	<u>20</u>	<u>20</u>	<u>60</u>	<u>70</u>

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5.	110	120	170	150	140	180	160	190
	<u>90</u>	<u>80</u>	<u>70</u>	<u>60</u>	<u>50</u>	<u>40</u>	<u>30</u>	<u>20</u>
6.	260	210	240	290	220	270	230	250
	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>	<u>60</u>	<u>80</u>	<u>70</u>	<u>90</u>
7.	350	320	390	360	330	380	340	370
	<u>20</u>	<u>70</u>	<u>40</u>	<u>80</u>	<u>60</u>	<u>50</u>	<u>90</u>	<u>30</u>
8.	520	640	720	840	750	930	630	410
	<u>30</u>	<u>50</u>	<u>90</u>	<u>50</u>	<u>70</u>	<u>40</u>	<u>80</u>	<u>60</u>

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9.	260	540	360	750	420	350	300	600
	<u>110</u>	<u>420</u>	<u>240</u>	<u>500</u>	<u>120</u>	<u>220</u>	<u>150</u>	<u>250</u>
10.	320	310	400	560	220	800	240	250
	<u>200</u>	<u>160</u>	<u>380</u>	<u>480</u>	<u>190</u>	<u>250</u>	<u>180</u>	<u>160</u>
11.	280	200	300	400	500	600	700	800
	<u>140</u>	<u>130</u>	<u>210</u>	<u>280</u>	<u>340</u>	<u>480</u>	<u>150</u>	<u>720</u>
12.	290	660	430	590	810	550	350	750
	<u>150</u>	<u>200</u>	<u>100</u>	<u>300</u>	<u>600</u>	<u>150</u>	<u>250</u>	<u>350</u>

1. Count by 2's to 20, and back by 2's to 2.
  2. Count by 3's to 30, and back by 3's to 3.
  3. Count by 4's to 40, and back by 4's to 4.
  4. Count by 5's to 50, and back by 5's to 5.
  5. Count by 6's to 60, and back by 6's to 6.
  6. Count by 7's to 70, and back by 7's to 7.
  7. Count by 8's to 80, and back by 8's to 8.
  8. Count by 9's to 90, and back by 9's to 9.
- 

9. Count by 3's to 60. Count back to 3.
  10. Count by 4's to 80. Count back to 4.
  11. Count by 6's to 120. Count back to 6.
  12. Count by 7's to 140. Count back to 7.
  13. Count by 8's to 160. Count back to 8.
  14. Count by 9's to 180. Count back to 9.
  15. Count by 11's to 220. Count back to 11.
  16. Count by 12's to 240. Count back to 12.
- 

17. Count by 13's to 169. How many 13's in 169?
18. Count by 15's to 225. How many 15's in 225?
19. Count by 16's to 256. How many 16's in 256?
20. Count by 20's to 400. How many 20's in 400?
21. Count by 25's to 625. How many 25's in 625?
22. What is meant by the "square" of a number?
23. What is the square of 13? Of 15? Of 16? Of 20? Of 25?

## WHOLE NUMBERS MULTIPLICATION

**Count by 2's to 24, and back to 2.**

**Recite the table of 2's.**

1. 5 times 2 = ?       $7 \times 2 = ?$       10 times 2 = ?       $6 \times 2 = ?$   
 9 times 2 = ?       $1 \times 2 = ?$       3 times 2 = ?       $11 \times 2 = ?$   
 2 times 2 = ?       $4 \times 2 = ?$       12 times 2 = ?       $8 \times 2 = ?$
2. How many 2's in 18?      How many 2's in 22?  
 How many 2's in 10?      How many 2's in 8?  
 How many 2's in 6?      How many 2's in 16?  
 How many 2's in 24?      How many 2's in 4?  
 How many 2's in 12?      How many 2's in 14?

**3.**    10        20        30        40        50        60        70        80        90  
      × 2    × 2    × 2    × 2    × 2    × 2    × 2    × 2    × 2

**Multiply :**

[illegible][illegible]

**Count by 3's to 36, and back to 3.**

**Recite the table of 3's.**

**1.**     $3 \times 3 = ?$              $8 \times 3 = ?$              $7 \times 3 = ?$              $6 \times 3 = ?$   
        $10 \times 3 = ?$          $1 \times 3 = ?$              $4 \times 3 = ?$              $2 \times 3 = ?$   
        $5 \times 3 = ?$          $12 \times 3 = ?$          $11 \times 3 = ?$          $9 \times 3 = ?$

**2.** How many 3's in 12?  
How many 3's in 21?  
How many 3's in 9?  
How many 3's in 24?  
How many 3's in 15?

How many 3's in 6?  
How many 3's in 18?  
How many 3's in 36?  
How many 3's in 33?  
How many 3's in 27?

**3.**    10        20        30        40        50        60        70        80        90  
      × 3        × 3        × 3        × 3        × 3        × 3        × 3        × 3        × 3

**Multiply :**

[illegible]

[illegible]

Recite the table of 4's.

**Multiply :**

- |            |                       |                       |                       |                       |                       |                       |                       |                       |                       |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>4.</b>  | <b>11</b><br><u>4</u> | <b>21</b><br><u>4</u> | <b>31</b><br><u>4</u> | <b>41</b><br><u>4</u> | <b>51</b><br><u>4</u> | <b>61</b><br><u>4</u> | <b>71</b><br><u>4</u> | <b>81</b><br><u>4</u> | <b>91</b><br><u>4</u> |
| <b>5.</b>  | <b>12</b><br><u>4</u> | <b>22</b><br><u>4</u> | <b>32</b><br><u>4</u> | <b>42</b><br><u>4</u> | <b>52</b><br><u>4</u> | <b>62</b><br><u>4</u> | <b>72</b><br><u>4</u> | <b>82</b><br><u>4</u> | <b>92</b><br><u>4</u> |
| <b>6.</b>  | <b>13</b><br><u>4</u> | <b>23</b><br><u>4</u> | <b>33</b><br><u>4</u> | <b>43</b><br><u>4</u> | <b>53</b><br><u>4</u> | <b>63</b><br><u>4</u> | <b>73</b><br><u>4</u> | <b>83</b><br><u>4</u> | <b>93</b><br><u>4</u> |
| <b>7.</b>  | <b>14</b><br><u>4</u> | <b>24</b><br><u>4</u> | <b>34</b><br><u>4</u> | <b>44</b><br><u>4</u> | <b>54</b><br><u>4</u> | <b>64</b><br><u>4</u> | <b>74</b><br><u>4</u> | <b>84</b><br><u>4</u> | <b>94</b><br><u>4</u> |
| <b>8.</b>  | <b>15</b><br><u>4</u> | <b>25</b><br><u>4</u> | <b>35</b><br><u>4</u> | <b>45</b><br><u>4</u> | <b>55</b><br><u>4</u> | <b>65</b><br><u>4</u> | <b>75</b><br><u>4</u> | <b>85</b><br><u>4</u> | <b>95</b><br><u>4</u> |
| <hr/>      |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| <b>9.</b>  | <b>16</b><br><u>4</u> | <b>26</b><br><u>4</u> | <b>36</b><br><u>4</u> | <b>46</b><br><u>4</u> | <b>56</b><br><u>4</u> | <b>66</b><br><u>4</u> | <b>76</b><br><u>4</u> | <b>86</b><br><u>4</u> | <b>96</b><br><u>4</u> |
| <b>10.</b> | <b>17</b><br><u>4</u> | <b>27</b><br><u>4</u> | <b>37</b><br><u>4</u> | <b>47</b><br><u>4</u> | <b>57</b><br><u>4</u> | <b>67</b><br><u>4</u> | <b>77</b><br><u>4</u> | <b>87</b><br><u>4</u> | <b>97</b><br><u>4</u> |
| <b>11.</b> | <b>18</b><br><u>4</u> | <b>28</b><br><u>4</u> | <b>38</b><br><u>4</u> | <b>48</b><br><u>4</u> | <b>58</b><br><u>4</u> | <b>68</b><br><u>4</u> | <b>78</b><br><u>4</u> | <b>88</b><br><u>4</u> | <b>98</b><br><u>4</u> |
| <b>12.</b> | <b>19</b><br><u>4</u> | <b>29</b><br><u>4</u> | <b>39</b><br><u>4</u> | <b>49</b><br><u>4</u> | <b>59</b><br><u>4</u> | <b>69</b><br><u>4</u> | <b>79</b><br><u>4</u> | <b>89</b><br><u>4</u> | <b>99</b><br><u>4</u> |





Count by 6's to 72, and back to 6.

Recite the table of 6's. Recite it backwards.

1. $6 \times 6 = ?$	$5 \times 6 = ?$	$1 \times 6 = ?$	$3 \times 6 = ?$
$10 \times 6 = ?$	$12 \times 6 = ?$	$4 \times 6 = ?$	$9 \times 6 = ?$
$2 \times 6 = ?$	$8 \times 6 = ?$	$11 \times 6 = ?$	$7 \times 6 = ?$

How many 6's

2. In 54?	In 72?	In 42?	In 48?	In 66?
In 30?	In 12?	In 18?	In 36?	In 24?
3. $\begin{array}{r} 10 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 30 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 40 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 50 \\ \times 6 \\ \hline \end{array}$
$\begin{array}{r} 60 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 70 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 80 \\ \times 6 \\ \hline \end{array}$	$\begin{array}{r} 90 \\ \times 6 \\ \hline \end{array}$	

4. $11 \times 5$	5. $12 \times 5$	6. $3 \times 4$	7. $2 \times 2$
$5 \times 4$	$10 \times 2$	$8 \times 2$	$4 \times 3$
$12 \times 3$	$5 \times 5$	$9 \times 5$	$8 \times 5$
$6 \times 2$	$11 \times 3$	$10 \times 4$	$6 \times 4$
$11 \times 4$	$7 \times 2$	$9 \times 3$	$7 \times 3$
$5 \times 3$	$9 \times 4$	$11 \times 2$	$9 \times 2$
$4 \times 2$	$10 \times 3$	$12 \times 4$	$2 \times 4$
$8 \times 3$	$7 \times 4$	$3 \times 3$	$10 \times 5$
$7 \times 5$	$3 \times 5$	$4 \times 4$	$12 \times 2$
$6 \times 3$	$8 \times 4$	$6 \times 5$	$2 \times 3$
$2 \times 5$	$3 \times 2$	$5 \times 2$	$4 \times 5$

Multiply :

8. $\begin{array}{r} 11 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 21 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 31 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 41 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 51 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 61 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 71 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 81 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 91 \\ 6 \\ \hline \end{array}$
9. $\begin{array}{r} 12 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 22 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 32 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 42 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 52 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 62 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 72 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 82 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 92 \\ 6 \\ \hline \end{array}$
10. $\begin{array}{r} 13 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 23 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 33 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 43 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 53 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 63 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 73 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 83 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 93 \\ 6 \\ \hline \end{array}$
11. $\begin{array}{r} 14 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 24 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 34 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 44 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 74 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 84 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 94 \\ 6 \\ \hline \end{array}$
12. $\begin{array}{r} 15 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 25 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 35 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 45 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 55 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 65 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 75 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ 6 \\ \hline \end{array}$	$\begin{array}{r} 95 \\ 6 \\ \hline \end{array}$



**Recite the table of 8's. Recite it backwards.**

- |    |               |    |               |    |               |    |               |
|----|---------------|----|---------------|----|---------------|----|---------------|
| 4. | $5 \times 4$  | 5. | $11 \times 4$ | 6. | $2 \times 6$  | 7. | $3 \times 7$  |
|    | $7 \times 5$  |    | $7 \times 7$  |    | $3 \times 5$  |    | $7 \times 6$  |
|    | $8 \times 6$  |    | $5 \times 6$  |    | $8 \times 7$  |    | $8 \times 4$  |
|    | $10 \times 7$ |    | $4 \times 5$  |    | $3 \times 4$  |    | $12 \times 6$ |
|    | $11 \times 5$ |    | $3 \times 6$  |    | $10 \times 6$ |    | $5 \times 7$  |
|    | $9 \times 4$  |    | $6 \times 4$  |    | $9 \times 7$  |    | $9 \times 6$  |
|    | $4 \times 7$  |    | $11 \times 7$ |    | $2 \times 5$  |    | $10 \times 5$ |
|    | $6 \times 6$  |    | $9 \times 5$  |    | $4 \times 6$  |    | $2 \times 7$  |
|    | $7 \times 4$  |    | $6 \times 7$  |    | $4 \times 4$  |    | $6 \times 5$  |
|    | $12 \times 5$ |    | $12 \times 4$ |    | $8 \times 5$  |    | $12 \times 7$ |
|    | $2 \times 4$  |    | $10 \times 4$ |    | $11 \times 6$ |    | $5 \times 5$  |

- |            |                       |                       |                       |                       |                       |                       |                       |                       |                       |
|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>8.</b>  | <b>11</b><br><u>8</u> | <b>21</b><br><u>8</u> | <b>31</b><br><u>8</u> | <b>41</b><br><u>8</u> | <b>51</b><br><u>8</u> | <b>61</b><br><u>8</u> | <b>71</b><br><u>8</u> | <b>81</b><br><u>8</u> | <b>91</b><br><u>8</u> |
| <b>9.</b>  | <b>12</b><br><u>8</u> | <b>22</b><br><u>8</u> | <b>32</b><br><u>8</u> | <b>42</b><br><u>8</u> | <b>52</b><br><u>8</u> | <b>62</b><br><u>8</u> | <b>72</b><br><u>8</u> | <b>82</b><br><u>8</u> | <b>92</b><br><u>8</u> |
| <b>10.</b> | <b>13</b><br><u>8</u> | <b>23</b><br><u>8</u> | <b>33</b><br><u>8</u> | <b>43</b><br><u>8</u> | <b>53</b><br><u>8</u> | <b>63</b><br><u>8</u> | <b>73</b><br><u>8</u> | <b>83</b><br><u>8</u> | <b>93</b><br><u>8</u> |
| <b>11.</b> | <b>14</b><br><u>8</u> | <b>24</b><br><u>8</u> | <b>34</b><br><u>8</u> | <b>44</b><br><u>8</u> | <b>54</b><br><u>8</u> | <b>64</b><br><u>8</u> | <b>74</b><br><u>8</u> | <b>84</b><br><u>8</u> | <b>94</b><br><u>8</u> |
| <b>12.</b> | <b>15</b><br><u>8</u> | <b>25</b><br><u>8</u> | <b>35</b><br><u>8</u> | <b>45</b><br><u>8</u> | <b>55</b><br><u>8</u> | <b>65</b><br><u>8</u> | <b>75</b><br><u>8</u> | <b>85</b><br><u>8</u> | <b>95</b><br><u>8</u> |



Count by 12's to 144, and back to 12.

Recite the table of 12's. Recite it backwards.

1.  $5 \times 12 = ?$        $6 \times 12 = ?$       2.  $12 \times ? = 120.$        $12 \times ? = 60.$   
 $9 \times 12 = ?$        $3 \times 12 = ?$        $12 \times ? = 48.$        $12 \times ? = 24.$   
 $12 \times 12 = ?$        $10 \times 12 = ?$        $12 \times ? = 72.$        $12 \times ? = 96.$   
 $4 \times 12 = ?$        $7 \times 12 = ?$        $12 \times ? = 108.$        $12 \times ? = 120.$   
 $8 \times 12 = ?$        $11 \times 12 = ?$        $12 \times ? = 36.$        $12 \times ? = 84.$   
 $2 \times 12 = ?$        $1 \times 12 = ?$        $12 \times ? = 132.$        $12 \times ? = 12.$

3.  $10 \times 11 = ?$        $11 \times 11 = ?$        $12 \times 11 = ?$

- 
- |                 |                  |                 |                 |                   |
|-----------------|------------------|-----------------|-----------------|-------------------|
| 4. $2 \times 6$ | 5. $7 \times 12$ | 6. $3 \times 6$ | 7. $2 \times 8$ | 8. $11 \times 11$ |
| $9 \times 9$    | $9 \times 6$     | $4 \times 7$    | $3 \times 9$    | $9 \times 8$      |
| $10 \times 11$  | $5 \times 9$     | $4 \times 9$    | $7 \times 7$    | $8 \times 7$      |
| $12 \times 7$   | $4 \times 12$    | $5 \times 12$   | $4 \times 6$    | $3 \times 8$      |
| $6 \times 6$    | $12 \times 11$   | $8 \times 9$    | $12 \times 8$   | $2 \times 9$      |
| $5 \times 8$    | $9 \times 7$     | $11 \times 7$   | $11 \times 12$  | $8 \times 12$     |
| $11 \times 9$   | $8 \times 6$     | $5 \times 6$    | $7 \times 9$    | $10 \times 9$     |
| $3 \times 12$   | $6 \times 9$     | $12 \times 12$  | $6 \times 12$   | $6 \times 8$      |
| $2 \times 7$    | $2 \times 12$    | $7 \times 8$    | $3 \times 7$    | $12 \times 9$     |
| $8 \times 8$    | $5 \times 7$     | $6 \times 7$    | $7 \times 6$    | $4 \times 8$      |
| $12 \times 6$   | $11 \times 6$    | $9 \times 12$   | $11 \times 8$   | $10 \times 12$    |
- 

Multiply:

- |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
| 9. $\begin{array}{r} 16 \\ \underline{6} \end{array}$  | $\begin{array}{r} 26 \\ \underline{6} \end{array}$ | $\begin{array}{r} 36 \\ \underline{6} \end{array}$ | $\begin{array}{r} 46 \\ \underline{6} \end{array}$ | $\begin{array}{r} 56 \\ \underline{6} \end{array}$ | $\begin{array}{r} 66 \\ \underline{6} \end{array}$ | $\begin{array}{r} 76 \\ \underline{6} \end{array}$ | $\begin{array}{r} 86 \\ \underline{6} \end{array}$ | $\begin{array}{r} 96 \\ \underline{6} \end{array}$ |
| 10. $\begin{array}{r} 17 \\ \underline{6} \end{array}$ | $\begin{array}{r} 27 \\ \underline{6} \end{array}$ | $\begin{array}{r} 37 \\ \underline{6} \end{array}$ | $\begin{array}{r} 47 \\ \underline{6} \end{array}$ | $\begin{array}{r} 57 \\ \underline{6} \end{array}$ | $\begin{array}{r} 67 \\ \underline{6} \end{array}$ | $\begin{array}{r} 77 \\ \underline{6} \end{array}$ | $\begin{array}{r} 87 \\ \underline{6} \end{array}$ | $\begin{array}{r} 97 \\ \underline{6} \end{array}$ |
| 11. $\begin{array}{r} 18 \\ \underline{6} \end{array}$ | $\begin{array}{r} 28 \\ \underline{6} \end{array}$ | $\begin{array}{r} 38 \\ \underline{6} \end{array}$ | $\begin{array}{r} 48 \\ \underline{6} \end{array}$ | $\begin{array}{r} 58 \\ \underline{6} \end{array}$ | $\begin{array}{r} 68 \\ \underline{6} \end{array}$ | $\begin{array}{r} 78 \\ \underline{6} \end{array}$ | $\begin{array}{r} 88 \\ \underline{6} \end{array}$ | $\begin{array}{r} 98 \\ \underline{6} \end{array}$ |
| 12. $\begin{array}{r} 19 \\ \underline{6} \end{array}$ | $\begin{array}{r} 29 \\ \underline{6} \end{array}$ | $\begin{array}{r} 39 \\ \underline{6} \end{array}$ | $\begin{array}{r} 49 \\ \underline{6} \end{array}$ | $\begin{array}{r} 59 \\ \underline{6} \end{array}$ | $\begin{array}{r} 69 \\ \underline{6} \end{array}$ | $\begin{array}{r} 79 \\ \underline{6} \end{array}$ | $\begin{array}{r} 89 \\ \underline{6} \end{array}$ | $\begin{array}{r} 99 \\ \underline{6} \end{array}$ |



1. 20		2. 56		3. 12	
48		32		20	
16		72		4	
24		16		22	
12		40		18	
36	How many	88	How many	8	How many
28	4's?	24	8's?	10	2's?
40		48		6	
32		64		14	
8		80		24	
44		96		16	
4. 10		5. 96		6. 15	
60		24		36	
25		60		6	
40		120		21	
30		36		9	
15	How many	72	How many	33	How many
55	5's?	108	12's?	18	3's?
20		48		27	
45		144		12	
50		84		24	
35		132		30	
7. 42		8. 99		9. 24	
56		18		60	
14		45		12	
35		63		36	
84		108		66	
21	How many	36	How many	30	How many
70	7's?	90	9's?	72	6's?
28		27		54	
49		72		42	
63		54		18	
77		81		48	

## Drill for Rapidity.

- |                  |                  |                  |                    |
|------------------|------------------|------------------|--------------------|
| 1. $2 \times 9$  | 4. $12 \times 2$ | 7. $3 \times 12$ | 10. $4 \times 2$   |
| $5 \times 10$    | $5 \times 4$     | $10 \times 9$    | $3 \times 9$       |
| $9 \times 4$     | $6 \times 6$     | $5 \times 11$    | $11 \times 3$      |
| $11 \times 5$    | $11 \times 8$    | $6 \times 10$    | $9 \times 10$      |
| $10 \times 3$    | $2 \times 10$    | $5 \times 2$     | $5 \times 8$       |
| $6 \times 2$     | $11 \times 12$   | $8 \times 3$     | $3 \times 6$       |
| $9 \times 8$     | $7 \times 3$     | $10 \times 7$    | $7 \times 5$       |
| $4 \times 12$    | $8 \times 5$     | $4 \times 8$     | $10 \times 4$      |
| $3 \times 11$    | $7 \times 7$     | $2 \times 6$     | $4 \times 7$       |
| $5 \times 6$     | $4 \times 9$     | $12 \times 4$    | $10 \times 11$     |
| 2. $3 \times 7$  | 5. $2 \times 11$ | 8. $9 \times 5$  | 11. $9 \times 12$  |
| $8 \times 12$    | $12 \times 12$   | $12 \times 9$    | $4 \times 3$       |
| $6 \times 3$     | $7 \times 2$     | $10 \times 2$    | $6 \times 5$       |
| $11 \times 2$    | $9 \times 11$    | $3 \times 10$    | $12 \times 11$     |
| $7 \times 4$     | $3 \times 3$     | $12 \times 3$    | $9 \times 9$       |
| $6 \times 9$     | $4 \times 10$    | $7 \times 11$    | $8 \times 2$       |
| $3 \times 2$     | $11 \times 4$    | $8 \times 4$     | $3 \times 4$       |
| $8 \times 11$    | $8 \times 9$     | $5 \times 12$    | $11 \times 6$      |
| $2 \times 8$     | $2 \times 5$     | $10 \times 5$    | $12 \times 7$      |
| $5 \times 5$     | $7 \times 8$     | $6 \times 7$     | $6 \times 8$       |
| 3. $10 \times 6$ | 6. $12 \times 6$ | 9. $4 \times 6$  | 12. $11 \times 10$ |
| $9 \times 7$     | $2 \times 7$     | $8 \times 8$     | $10 \times 12$     |
| $10 \times 10$   | $7 \times 12$    | $2 \times 12$    | $4 \times 5$       |
| $2 \times 3$     | $2 \times 2$     | $9 \times 2$     | $3 \times 8$       |
| $12 \times 8$    | $4 \times 11$    | $11 \times 11$   | $9 \times 6$       |
| $6 \times 11$    | $5 \times 3$     | $8 \times 10$    | $11 \times 9$      |
| $4 \times 4$     | $7 \times 6$     | $9 \times 3$     | $8 \times 7$       |
| $7 \times 10$    | $12 \times 10$   | $7 \times 9$     | $12 \times 5$      |
| $8 \times 6$     | $5 \times 9$     | $10 \times 8$    | $9 \times 7$       |
| $5 \times 7$     | $2 \times 4$     | $6 \times 4$     | $7 \times 8$       |
| $6 \times 12$    | $11 \times 7$    | $3 \times 5$     | $6 \times 7$       |





## Drill for Rapidity

1.	2.	3.	4.
Take 2 from	Take 3 from	Take 4 from	Take 5 from
$12 \times 3$	$6 \times 3$	$8 \times 9$	$9 \times 8$
$3 \times 5$	$12 \times 12$	$12 \times 10$	$7 \times 4$
$4 \times 9$	$3 \times 4$	$10 \times 11$	$9 \times 6$
$6 \times 4$	$4 \times 5$	$8 \times 12$	$8 \times 7$
$3 \times 12$	$6 \times 9$	$12 \times 11$	$7 \times 6$
$8 \times 11$	$7 \times 12$	$9 \times 7$	$4 \times 12$
$12 \times 7$	$12 \times 5$	$12 \times 6$	$8 \times 6$
$9 \times 2$	$11 \times 11$	$9 \times 12$	$7 \times 9$

5.	6.	7.	8.
Take 6 from	Take 7 from	Take 8 from	Take 9 from
$7 \times 5$	$12 \times 9$	$9 \times 11$	$5 \times 6$
$8 \times 8$	$12 \times 4$	$5 \times 4$	$7 \times 8$
$4 \times 12$	$6 \times 8$	$7 \times 2$	$5 \times 9$
$7 \times 7$	$4 \times 7$	$6 \times 5$	$6 \times 7$
$9 \times 5$	$3 \times 6$	$9 \times 9$	$4 \times 8$
$8 \times 3$	$8 \times 4$	$12 \times 8$	$6 \times 6$
$9 \times 4$	$5 \times 3$	$11 \times 10$	$8 \times 2$
$7 \times 3$	$11 \times 12$	$5 \times 12$	$7 \times 11$
$3 \times 8$	$6 \times 12$	$4 \times 4$	$12 \times 2$

[illegible]

1. 18 divided by 2	2. $4 \div 2$	3. $16 \div 2$	4. $6 \div 2$
21 divided by 3	$27 \div 3$	$15 \div 3$	$9 \div 3$
24 divided by 4	$8 \div 4$	$32 \div 4$	$28 \div 4$
40 divided by 5	$25 \div 5$	$10 \div 5$	$20 \div 5$
36 divided by 6	$24 \div 6$	$18 \div 6$	$42 \div 6$
21 divided by 7	$63 \div 7$	$49 \div 7$	$28 \div 7$
40 divided by 8	$48 \div 8$	$72 \div 8$	$56 \div 8$
18 divided by 9	$45 \div 9$	$72 \div 9$	$54 \div 9$
33 divided by 11	$77 \div 11$	$44 \div 11$	$99 \div 11$
96 divided by 12	$24 \div 12$	$84 \div 12$	$60 \div 12$

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5. $2 \overline{)46}$	6. $3 \overline{)84}$	7. $4 \overline{)84}$	8. $5 \overline{)95}$	9. $6 \overline{)120}$	10. $7 \overline{)91}$
$2 \overline{)54}$	$3 \overline{)96}$	$4 \overline{)96}$	$5 \overline{)100}$	$6 \overline{)150}$	$7 \overline{)210}$
$2 \overline{)88}$	$3 \overline{)69}$	$4 \overline{)44}$	$5 \overline{)80}$	$6 \overline{)96}$	$7 \overline{)147}$
$2 \overline{)62}$	$3 \overline{)52}$	$4 \overline{)76}$	$5 \overline{)75}$	$6 \overline{)90}$	$7 \overline{)98}$
$2 \overline{)50}$	$3 \overline{)78}$	$4 \overline{)56}$	$5 \overline{)125}$	$6 \overline{)132}$	$7 \overline{)154}$
$2 \overline{)72}$	$3 \overline{)57}$	$4 \overline{)68}$	$5 \overline{)90}$	$6 \overline{)144}$	$7 \overline{)105}$
$2 \overline{)96}$	$3 \overline{)81}$	$4 \overline{)88}$	$5 \overline{)105}$	$6 \overline{)108}$	$7 \overline{)161}$
$2 \overline{)78}$	$3 \overline{)90}$	$4 \overline{)72}$	$5 \overline{)150}$	$6 \overline{)84}$	$7 \overline{)224}$

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11. $2 \overline{)264}$	12. $7 \overline{)252}$	13. $3 \overline{)654}$	14. $5 \overline{)650}$	15. $2 \overline{)270}$
$3 \overline{)357}$	$4 \overline{)252}$	$4 \overline{)340}$	$6 \overline{)372}$	$3 \overline{)270}$
$6 \overline{)624}$	$6 \overline{)192}$	$7 \overline{)714}$	$4 \overline{)372}$	$4 \overline{)900}$
$4 \overline{)516}$	$2 \overline{)508}$	$6 \overline{)240}$	$3 \overline{)810}$	$6 \overline{)450}$
$5 \overline{)720}$	$5 \overline{)375}$	$2 \overline{)500}$	$7 \overline{)350}$	$7 \overline{)364}$

1. $10 \div 2$	2. $14 \div 2$	3. $12 \div 2$	4. $8 \div 2$
$6 \div 3$	$24 \div 3$	$12 \div 3$	$18 \div 3$
$36 \div 4$	$12 \div 4$	$20 \div 4$	$16 \div 4$
$15 \div 5$	$30 \div 5$	$35 \div 5$	$45 \div 5$
$30 \div 6$	$48 \div 6$	$54 \div 6$	$12 \div 6$
$14 \div 7$	$35 \div 7$	$42 \div 7$	$56 \div 7$
$24 \div 8$	$64 \div 8$	$32 \div 8$	$16 \div 8$
$63 \div 9$	$27 \div 9$	$81 \div 9$	$36 \div 9$
$55 \div 11$	$88 \div 11$	$22 \div 11$	$66 \div 11$
$48 \div 12$	$108 \div 12$	$72 \div 12$	$36 \div 12$

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5. $8 \overline{)640}$	6. $9 \overline{)198}$	7. $10 \overline{)640}$	8. $11 \overline{)341}$	9. $12 \overline{)252}$
$8 \overline{)128}$	$9 \overline{)270}$	$10 \overline{)210}$	$11 \overline{)572}$	$12 \overline{)600}$
$8 \overline{)256}$	$9 \overline{)927}$	$10 \overline{)700}$	$11 \overline{)132}$	$12 \overline{)132}$
$8 \overline{)328}$	$9 \overline{)153}$	$10 \overline{)350}$	$11 \overline{)187}$	$12 \overline{)384}$
$8 \overline{)816}$	$9 \overline{)468}$	$10 \overline{)200}$	$11 \overline{)209}$	$12 \overline{)504}$
$8 \overline{)560}$	$9 \overline{)945}$	$10 \overline{)470}$	$11 \overline{)165}$	$12 \overline{)708}$
$8 \overline{)808}$	$9 \overline{)207}$	$10 \overline{)110}$	$11 \overline{)440}$	$12 \overline{)288}$
$8 \overline{)488}$	$9 \overline{)846}$	$10 \overline{)600}$	$11 \overline{)693}$	$12 \overline{)192}$

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10. $7 \overline{)3500}$	11. $8 \overline{)6000}$	12. $11 \overline{)2530}$	13. $8 \overline{)8056}$
$8 \overline{)6480}$	$11 \overline{)4510}$	$8 \overline{)1616}$	$12 \overline{)1440}$
$9 \overline{)8109}$	$7 \overline{)1428}$	$12 \overline{)4800}$	$11 \overline{)3410}$
$11 \overline{)5533}$	$12 \overline{)6036}$	$6 \overline{)3606}$	$9 \overline{)2070}$
$12 \overline{)6012}$	$9 \overline{)4680}$	$9 \overline{)9045}$	$6 \overline{)6048}$

1.	2.	3.	4.	5.	6.
9) <u>36</u>	4) <u>60</u>	12) <u>36</u>	8) <u>64</u>	12) <u>132</u>	8) <u>72</u>
12) <u>72</u>	3) <u>45</u>	4) <u>48</u>	12) <u>96</u>	7) <u>28</u>	4) <u>28</u>
7) <u>35</u>	5) <u>40</u>	11) <u>110</u>	7) <u>21</u>	8) <u>32</u>	7) <u>84</u>
11) <u>66</u>	11) <u>132</u>	6) <u>24</u>	3) <u>15</u>	12) <u>120</u>	9) <u>45</u>
12) <u>60</u>	12) <u>48</u>	8) <u>24</u>	5) <u>60</u>	3) <u>18</u>	12) <u>108</u>
9) <u>27</u>	8) <u>56</u>	12) <u>24</u>	12) <u>84</u>	5) <u>30</u>	11) <u>44</u>
6) <u>42</u>	7) <u>63</u>	5) <u>45</u>	6) <u>36</u>	7) <u>42</u>	4) <u>24</u>
4) <u>32</u>	9) <u>72</u>	3) <u>27</u>	4) <u>20</u>	6) <u>48</u>	10) <u>120</u>

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7. $12 \div ? = 4$	8. $28 \div ? = 4$	9. $72 \div ? = 6$
$27 \div ? = 9$	$42 \div ? = 7$	$56 \div ? = 8$
$44 \div ? = 4$	$108 \div ? = 12$	$132 \div ? = 11$
$36 \div ? = 6$	$84 \div ? = 7$	$110 \div ? = 10$
$81 \div ? = 9$	$54 \div ? = 6$	$42 \div ? = 7$
$72 \div ? = 12$	$35 \div ? = 7$	$54 \div ? = 6$
$63 \div ? = 9$	$42 \div ? = 6$	$64 \div ? = 8$
$56 \div ? = 7$	$63 \div ? = 7$	$84 \div ? = 12$

---

10. Count by 25's to 600.

11. Count by 75's to 900.

12. 15) <u>600</u>	13. 50) <u>600</u>	14. 15) <u>450</u>	15. 25) <u>200</u>	16. 75) <u>150</u>
20) <u>400</u>	60) <u>720</u>	16) <u>320</u>	25) <u>300</u>	75) <u>300</u>
25) <u>500</u>	70) <u>770</u>	21) <u>420</u>	25) <u>150</u>	75) <u>225</u>
30) <u>330</u>	80) <u>960</u>	22) <u>880</u>	25) <u>450</u>	75) <u>600</u>
40) <u>160</u>	90) <u>270</u>	24) <u>720</u>	25) <u>600</u>	75) <u>750</u>

Divide by 2:

1.	20	42	36	44	26	60	32	28
2.	18	50	22	40	58	46	38	62
3.	34	52	24	30	48	64	56	66
4.	54	70	90	84	78	80	92	68
5.	86	94	82	74	96	72	88	76

Divide by 3:

1.	12	21	42	15	36	24	30	18
2.	27	45	33	51	39	48	57	69
3.	54	81	60	84	75	66	72	93
4.	78	90	87	99	63	96	120	102
5.	111	129	105	126	117	108	123	114

Divide by 4:

1.	20	44	72	28	36	16	24	12
2.	40	56	68	52	76	60	48	64
3.	80	96	84	92	88	32	120	160
4.	104	144	116	136	168	124	108	132
5.	140	156	112	152	148	164	100	128

Divide by 5:

1.	60	15	30	70	55	35	75	10
2.	50	95	20	90	65	40	85	25
3.	80	45	100	120	160	105	135	150
4.	110	140	180	115	165	190	125	155
5.	130	170	200	175	205	195	145	185

Divide by 10:

1.	120	210	150	110	240	130	170	200
2.	190	300	140	160	220	180	250	230

Divide by 6 :

1.	12	66	24	84	42	96	54	60
2.	18	72	30	90	36	48	78	102
3.	114	174	132	108	150	138	186	120
4.	156	126	144	192	162	198	168	180
5.	240	204	234	246	216	228	210	222

Divide by 7 :

1.	21	70	91	14	84	56	28	49
2.	63	77	35	98	42	105	140	126
3.	147	154	133	168	182	161	119	189
4.	112	175	196	210	280	203	245	266
5.	238	259	224	273	252	231	217	287

Divide by 8 :

1.	88	40	16	56	32	64	24	72
2.	96	48	80	104	160	144	112	136
3.	120	176	128	152	184	168	192	240
4.	200	280	232	208	256	216	264	224
5.	248	272	296	288	320	304	328	312

Divide by 9 :

1.	90	45	72	99	36	81	54	18
2.	27	63	108	135	180	117	153	198
3.	144	171	126	189	162	207	243	270
4.	216	252	288	234	225	261	279	297
5.	306	333	360	342	315	369	351	324

Divide by 11 :

1.	110	209	121	220	165	231	198	132
2.	264	187	143	176	154	253	275	242

How many times, and how many over?

1.	$6 \overline{)50}$	$4 \overline{)30}$	$8 \overline{)25}$	$10 \overline{)36}$	$7 \overline{)40}$	$8 \overline{)60}$
2.	$4 \overline{)21}$	$3 \overline{)18}$	$8 \overline{)42}$	$5 \overline{)19}$	$12 \overline{)63}$	$8 \overline{)75}$
3.	$5 \overline{)28}$	$10 \overline{)42}$	$9 \overline{)46}$	$3 \overline{)17}$	$12 \overline{)80}$	$10 \overline{)37}$
4.	$4 \overline{)45}$	$3 \overline{)22}$	$6 \overline{)67}$	$7 \overline{)56}$	$8 \overline{)70}$	$5 \overline{)18}$
5.	$12 \overline{)33}$	$11 \overline{)56}$	$9 \overline{)29}$	$4 \overline{)32}$	$6 \overline{)62}$	$8 \overline{)49}$
6.	$9 \overline{)88}$	$11 \overline{)76}$	$5 \overline{)54}$	$7 \overline{)55}$	$4 \overline{)37}$	$6 \overline{)52}$
<hr/>						
7.	$12 \overline{)100}$	$15 \overline{)35}$	$6 \overline{)130}$	$5 \overline{)182}$	$3 \overline{)205}$	
8.	$3 \overline{)100}$	$25 \overline{)54}$	$8 \overline{)165}$	$4 \overline{)330}$	$6 \overline{)320}$	
9.	$8 \overline{)100}$	$30 \overline{)95}$	$12 \overline{)200}$	$9 \overline{)640}$	$7 \overline{)135}$	
10.	$6 \overline{)100}$	$20 \overline{)83}$	$9 \overline{)125}$	$6 \overline{)254}$	$4 \overline{)163}$	
11.	$7 \overline{)100}$	$12 \overline{)150}$	$7 \overline{)368}$	$12 \overline{)302}$	$8 \overline{)334}$	
12.	$9 \overline{)100}$	$40 \overline{)125}$	$11 \overline{)452}$	$8 \overline{)250}$	$5 \overline{)481}$	
<hr/>						
13.	$13 \overline{)28}$	$24 \overline{)55}$	$35 \overline{)80}$	$14 \overline{)56}$	$21 \overline{)75}$	
14.	$50 \overline{)112}$	$16 \overline{)48}$	$75 \overline{)160}$	$44 \overline{)90}$	$37 \overline{)60}$	
15.	$15 \overline{)75}$	$28 \overline{)60}$	$33 \overline{)100}$	$61 \overline{)125}$	$70 \overline{)300}$	
16.	$36 \overline{)80}$	$55 \overline{)165}$	$80 \overline{)250}$	$45 \overline{)53}$	$22 \overline{)100}$	
17.	$17 \overline{)51}$	$23 \overline{)80}$	$42 \overline{)100}$	$93 \overline{)200}$	$56 \overline{)75}$	
18.	$30 \overline{)160}$	$18 \overline{)90}$	$36 \overline{)45}$	$19 \overline{)62}$	$66 \overline{)80}$	



How many times, and how many over?

1.	$3 \overline{)16}$	$2 \overline{)21}$	$5 \overline{)18}$	$4 \overline{)25}$	$3 \overline{)28}$	$6 \overline{)21}$
2.	$4 \overline{)19}$	$3 \overline{)25}$	$2 \overline{)15}$	$6 \overline{)39}$	$5 \overline{)23}$	$3 \overline{)14}$
3.	$6 \overline{)50}$	$4 \overline{)30}$	$8 \overline{)25}$	$10 \overline{)36}$	$7 \overline{)40}$	$10 \overline{)57}$
4.	$4 \overline{)21}$	$3 \overline{)32}$	$8 \overline{)42}$	$5 \overline{)19}$	$12 \overline{)63}$	$8 \overline{)60}$
5.	$5 \overline{)28}$	$10 \overline{)42}$	$9 \overline{)76}$	$3 \overline{)17}$	$12 \overline{)80}$	$8 \overline{)75}$
6.	$4 \overline{)45}$	$3 \overline{)22}$	$6 \overline{)67}$	$7 \overline{)56}$	$8 \overline{)70}$	$5 \overline{)16}$
7.	$12 \overline{)33}$	$11 \overline{)56}$	$9 \overline{)29}$	$4 \overline{)35}$	$6 \overline{)62}$	$8 \overline{)49}$
8.	$9 \overline{)88}$	$11 \overline{)76}$	$5 \overline{)54}$	$7 \overline{)55}$	$4 \overline{)37}$	$6 \overline{)52}$
9.	$5 \overline{)48}$	$2 \overline{)17}$	$3 \overline{)35}$	$4 \overline{)18}$	$9 \overline{)40}$	$5 \overline{)34}$
10.	$8 \overline{)36}$	$6 \overline{)40}$	$5 \overline{)58}$	$3 \overline{)10}$	$7 \overline{)44}$	$11 \overline{)40}$
11.	$5 \overline{)42}$	$3 \overline{)29}$	$4 \overline{)23}$	$6 \overline{)25}$	$8 \overline{)54}$	$7 \overline{)33}$
12.	$3 \overline{)23}$	$3 \overline{)11}$	$3 \overline{)19}$	$3 \overline{)23}$	$3 \overline{)31}$	$3 \overline{)38}$
13.	$4 \overline{)13}$	$4 \overline{)42}$	$4 \overline{)34}$	$4 \overline{)26}$	$4 \overline{)38}$	$4 \overline{)49}$
14.	$5 \overline{)12}$	$5 \overline{)56}$	$5 \overline{)41}$	$5 \overline{)36}$	$5 \overline{)27}$	$5 \overline{)52}$
15.	$6 \overline{)20}$	$6 \overline{)16}$	$6 \overline{)33}$	$6 \overline{)45}$	$6 \overline{)27}$	$6 \overline{)55}$
16.	$7 \overline{)17}$	$7 \overline{)50}$	$7 \overline{)25}$	$7 \overline{)38}$	$7 \overline{)62}$	$7 \overline{)75}$
17.	$8 \overline{)28}$	$8 \overline{)83}$	$8 \overline{)26}$	$8 \overline{)44}$	$8 \overline{)38}$	$8 \overline{)52}$
18.	$9 \overline{)35}$	$9 \overline{)70}$	$9 \overline{)50}$	$9 \overline{)67}$	$9 \overline{)31}$	$9 \overline{)22}$
19.	$11 \overline{)80}$	$11 \overline{)30}$	$11 \overline{)60}$	$11 \overline{)20}$	$11 \overline{)50}$	$11 \overline{)90}$
20.	$12 \overline{)50}$	$12 \overline{)65}$	$12 \overline{)44}$	$12 \overline{)27}$	$12 \overline{)18}$	$12 \overline{)99}$

Division is expressed in two ways. The division of 2 by 5 may be expressed " $2 \div 5$ " or " $\frac{2}{5}$ ."

Read the following expressions as fractions. Tell whether each fraction is proper or improper. Change improper fractions to whole numbers, and proper fractions to lowest terms.

- |                |               |               |                |
|----------------|---------------|---------------|----------------|
| 1. $12 \div 4$ | 2. $6 \div 3$ | 3. $3 \div 6$ | 4. $6 \div 18$ |
| $9 \div 3$     | $20 \div 10$  | $14 \div 7$   | $4 \div 20$    |
| $8 \div 16$    | $16 \div 4$   | $4 \div 12$   | $5 \div 20$    |
| $5 \div 10$    | $8 \div 2$    | $8 \div 4$    | $10 \div 2$    |
| $4 \div 2$     | $5 \div 15$   | $2 \div 8$    | $4 \div 16$    |
| $10 \div 5$    | $3 \div 12$   | $7 \div 14$   | $3 \div 9$     |
| $16 \div 8$    | $15 \div 3$   | $3 \div 3$    | $2 \div 4$     |
| $2 \div 14$    | $12 \div 2$   | $18 \div 9$   | $12 \div 16$   |
- 

Read. Change to fractional form. Reduce.

- |                |                |                 |                 |
|----------------|----------------|-----------------|-----------------|
| 5. $8 \div 12$ | 6. $7 \div 49$ | 7. $16 \div 24$ | 8. $45 \div 60$ |
| $4 \div 16$    | $8 \div 56$    | $24 \div 36$    | $15 \div 21$    |
| $6 \div 48$    | $15 \div 25$   | $30 \div 40$    | $14 \div 77$    |
| $7 \div 21$    | $6 \div 28$    | $9 \div 15$     | $54 \div 60$    |
| $9 \div 63$    | $4 \div 18$    | $32 \div 40$    | $16 \div 72$    |
| $8 \div 40$    | $12 \div 18$   | $27 \div 36$    | $5 \div 30$     |
| $3 \div 18$    | $9 \div 9$     | $40 \div 64$    | $12 \div 20$    |
| $4 \div 32$    | $21 \div 35$   | $36 \div 42$    | $40 \div 50$    |
- 

Read as fractions. Reduce where possible to do so.

- |               |                 |                  |                  |
|---------------|-----------------|------------------|------------------|
| 9. $2 \div 3$ | 10. $8 \div 20$ | 11. $100 \div 8$ | 12. $5 \div 100$ |
| $80 \div 9$   | $2 \div 50$     | $100 \div 3$     | $4 \div 100$     |
| $25 \div 100$ | $25 \div 5$     | $100 \div 6$     | $10 \div 100$    |
| $4 \div 5$    | $6 \div 7$      | $100 \div 7$     | $25 \div 100$    |
| $3 \div 11$   | $5 \div 10$     | $100 \div 12$    | $50 \div 100$    |

## Drill for Rapidity.

1. $18 \div 9$	4. $24 \div 2$	7. $36 \div 12$	10. $8 \div 2$
$50 \div 10$	$20 \div 4$	$90 \div 9$	$27 \div 9$
$36 \div 4$	$36 \div 6$	$55 \div 11$	$33 \div 3$
$55 \div 5$	$88 \div 8$	$60 \div 10$	$90 \div 10$
$30 \div 3$	$20 \div 10$	$10 \div 2$	$40 \div 8$
$12 \div 2$	$132 \div 12$	$24 \div 3$	$18 \div 6$
$72 \div 8$	$21 \div 3$	$70 \div 7$	$35 \div 5$
$48 \div 12$	$40 \div 5$	$32 \div 8$	$40 \div 4$
$33 \div 11$	$49 \div 7$	$12 \div 6$	$28 \div 7$
$30 \div 6$	$36 \div 9$	$48 \div 4$	$110 \div 11$
2. $21 \div 7$	5. $22 \div 11$	8. $45 \div 5$	11. $108 \div 12$
$96 \div 12$	$14 \div 2$	$108 \div 9$	$12 \div 3$
$18 \div 3$	$99 \div 11$	$20 \div 2$	$30 \div 5$
$22 \div 2$	$9 \div 3$	$30 \div 10$	$132 \div 11$
$28 \div 4$	$40 \div 10$	$36 \div 3$	$81 \div 9$
$54 \div 9$	$44 \div 4$	$77 \div 11$	$16 \div 2$
$6 \div 2$	$72 \div 9$	$32 \div 4$	$12 \div 4$
$88 \div 11$	$10 \div 5$	$60 \div 12$	$66 \div 6$
$16 \div 8$	$56 \div 8$	$50 \div 5$	$84 \div 7$
$25 \div 5$	$72 \div 6$	$42 \div 7$	$48 \div 8$
3. $60 \div 6$	6. $14 \div 7$	9. $24 \div 6$	12. $110 \div 10$
$63 \div 7$	$24 \div 12$	$64 \div 8$	$120 \div 12$
$100 \div 10$	$4 \div 2$	$84 \div 12$	$20 \div 5$
$6 \div 3$	$44 \div 11$	$18 \div 2$	$24 \div 8$
$96 \div 8$	$15 \div 3$	$121 \div 11$	$54 \div 6$
$66 \div 11$	$42 \div 6$	$80 \div 10$	$99 \div 9$
$16 \div 4$	$120 \div 10$	$27 \div 3$	$56 \div 7$
$70 \div 10$	$45 \div 9$	$63 \div 9$	$60 \div 5$
$48 \div 6$	$8 \div 4$	$80 \div 8$	$63 \div 7$
$35 \div 7$	$144 \div 12$	$24 \div 4$	$56 \div 8$
$72 \div 12$	$77 \div 7$	$15 \div 5$	$42 \div 7$

1. Divide by 4:

$6 \times 6$

$8 \times 6$

$3 \times 8$

$6 \times 2$

$8 \times 2$

$2 \times 10$

$8 \times 5$

2. Divide by 6:

$4 \times 9$

$9 \times 8$

$2 \times 12$

$12 \times 5$

$3 \times 4$

$2 \times 30$

$9 \times 2$

3. Divide by 8:

$12 \times 2$

$2 \times 20$

$6 \times 12$

$2 \times 4$

$16 \times 2$

$4 \times 12$

$4 \times 4$

Divide:

4.  $4 \times 5$  by  $2 \times 2$ .

$6 \times 6$  by  $3 \times 2$ .

$8 \times 6$  by  $4 \times 3$ .

$2 \times 12$  by  $2 \times 2$ .

5.  $8 \times 12$  by  $3 \times 4$ .

$6 \times 10$  by  $2 \times 5$ .

$9 \times 2$  by  $3 \times 2$ .

$7 \times 4$  by  $2 \times 2$ .

6.  $10 \times 4$  by  $5 \times 2$ .

$6 \times 7$  by  $2 \times 3$ .

$8 \times 3$  by  $2 \times 2$ .

$5 \times 8$  by  $2 \times 4$ .

7.  $10 \times 10$  by  $5 \times 5$ .

$8 \times 9$  by  $3 \times 4$ .

$6 \times 11$  by  $2 \times 3$ .

$12 \times 6$  by  $3 \times 3$ .

8.  $3 \times 4 \times 5$  divided by  $2 \times 2 = ?$

9.  $3 \times 3 \times 8$  divided by  $2 \times 3 \times 2 = ?$

10.  $4 \times 10 \times 3$  divided by  $2 \times 2 \times 5 = ?$

11.  $8 \times 5 \times 2$  divided by  $2 \times 5 = ?$

12.  $9 \times 5 \times 2$  divided by  $3 \times 3 = ?$

13.  $3 \times 7 \times 4$  divided by  $3 \times 2 \times 2 = ?$

14.  $5 \times 7 \times 2$  divided by  $2 \times 5 = ?$

15.  $6 \times 5 \times 4$  divided by  $2 \times 2 \times 2 = ?$

16.  $10 \times 10 \times 2$  divided by  $5 \times 5 = ?$

17.  $2 \times 8 \times 10$  divided by  $5 \times 2 = ?$

# 50 PRACTICE IN INTERPRETING SIGNS QUICKLY

1.	2.	3.	4.
$5 - 3 = ?$	$3 \times 3 = ?$	$15 \div 5 = ?$	$12 \div 2 = ?$
$7 + 2 = ?$	$16 - 7 = ?$	$4 \times 4 = ?$	$4 + 15 = ?$
$9 \div 3 = ?$	$8 + 5 = ?$	$5 + 11 = ?$	$8 - 3 = ?$
$8 - 5 = ?$	$20 \div 4 = ?$	$19 - 7 = ?$	$7 + 9 = ?$
$2 \times 4 = ?$	$14 \div 2 = ?$	$12 \div 3 = ?$	$15 \div 3 = ?$
$6 + 7 = ?$	$3 + 11 = ?$	$11 + 4 = ?$	$2 \times 8 = ?$
$18 \div 2 = ?$	$15 - 7 = ?$	$8 \div 2 = ?$	$12 - 9 = ?$
$6 \times 3 = ?$	$7 + 8 = ?$	$16 - 9 = ?$	$5 \times 4 = ?$
$9 - 4 = ?$	$4 \times 5 = ?$	$3 \times 5 = ?$	$20 - 11 = ?$
$8 + 11 = ?$	$12 + 8 = ?$	$7 + 11 = ?$	$8 + 8 = ?$
5.	6.	7.	8.
$24 + 8 = ?$	$12 \times 5 = ?$	$88 + 11 = ?$	$48 + 6 = ?$
$49 \div 7 = ?$	$96 - 8 = ?$	$64 - 8 = ?$	$8 \times 7 = ?$
$63 - 7 = ?$	$56 + 7 = ?$	$96 \div 12 = ?$	$36 + 12 = ?$
$8 \times 9 = ?$	$7 \times 8 = ?$	$42 - 7 = ?$	$60 - 12 = ?$
$14 + 14 = ?$	$45 - 9 = ?$	$32 + 8 = ?$	$35 \div 7 = ?$
$56 \div 7 = ?$	$8 \times 12 = ?$	$27 \div 3 = ?$	$18 + 9 = ?$
$42 - 6 = ?$	$40 + 8 = ?$	$9 \times 6 = ?$	$84 \div 7 = ?$
$12 \times 7 = ?$	$36 \div 4 = ?$	$54 \div 9 = ?$	$81 - 9 = ?$
$36 + 9 = ?$	$72 - 6 = ?$	$28 - 7 = ?$	$40 \div 4 = ?$
$84 - 12 = ?$	$40 \div 5 = ?$	$42 \div 6 = ?$	$35 + 7 = ?$
9.	10.	11.	12.
$132 \div 12 = ?$	$60 \times 6 = ?$	$55 \times 2 = ?$	$13 \times 3 = ?$
$150 - 25 = ?$	$140 - 32 = ?$	$108 \div 36 = ?$	$225 \div 25 = ?$
$12 \times 20 = ?$	$70 + 35 = ?$	$43 + 62 = ?$	$105 - 40 = ?$
$135 + 15 = ?$	$250 \div 50 = ?$	$88 - 27 = ?$	$18 + 54 = ?$
$75 - 25 = ?$	$100 - 22 = ?$	$39 + 26 = ?$	$72 \div 36 = ?$
$50 + 15 = ?$	$300 \div 15 = ?$	$165 \div 15 = ?$	$100 - 14 = ?$
$64 \times 2 = ?$	$7 \times 21 = ?$	$16 \times 6 = ?$	$96 \div 16 = ?$
$175 \div 5 = ?$	$33 + 18 = ?$	$80 - 48 = ?$	$50 + 75 = ?$
$80 \times 12 = ?$	$95 - 42 = ?$	$48 \div 16 = ?$	$5 \times 25 = ?$
$100 - 54 = ?$	$144 \div 12 = ?$	$50 \times 12 = ?$	$75 \div 15 = ?$

Tell whether your answer is product, quotient, sum, or remainder.

- |                 |                  |                          |                 |
|-----------------|------------------|--------------------------|-----------------|
| 1. $3 \times 4$ | 2. $3 \times 7$  | 3. $2 \times 11$         | 4. $16 \div 4$  |
| $7 + 8$         | $35 \div 5$      | $36 \div 4$              | $25 - 7$        |
| $18 \div 3$     | $5 + 7$          | $4 + 8$                  | $17 + 7$        |
| $9 - 5$         | $11 - 5$         | $21 - 7$                 | $9 \times 3$    |
| $14 + 5$        | $32 \div 8$      | $18 \div 9$              | $49 \div 7$     |
| $3 \times 9$    | $9 + 8$          | $12 + 6$                 | $11 + 6$        |
| $24 \div 3$     | $20 - 9$         | $25 \div 5$              | $28 - 7$        |
| $5 \times 4$    | $6 \times 5$     | $3 \times 3$             | $7 \times 5$    |
| $11 - 2$        | $5 + 12$         | $11 - 8$                 | $36 \div 6$     |
| $8 + 3$         | $24 - 12$        | $6 + 7$                  | $17 - 9$        |
| <hr/>           |                  |                          |                 |
| 5. $5 + 8$      | 6. $2 \times 15$ | 7. $35 - 7$              | 8. $9 \times 9$ |
| $8 \times 7$    | $45 \div 5$      | $18 + 7$                 | $14 + 5$        |
| $42 \div 7$     | $18 + 5$         | $56 \div 7$              | $25 - 9$        |
| $17 - 8$        | $15 - 7$         | $6 \times 12$            | $60 \div 5$     |
| $6 \times 9$    | $7 \times 9$     | $7 + 9$                  | $12 \times 5$   |
| $63 \div 7$     | $108 \div 9$     | $48 \div 6$              | $44 \div 11$    |
| $14 + 11$       | $8 + 7$          | $22 - 8$                 | $17 - 9$        |
| $7 \times 6$    | $23 - 7$         | $54 \div 9$              | $13 + 12$       |
| $13 - 5$        | $9 \times 6$     | $6 \times 11$            | $8 \times 8$    |
| $40 \div 4$     | $60 \div 2$      | $34 - 6$                 | $45 \div 9$     |
| <hr/>           |                  |                          |                 |
| 9. $125 \div 5$ | 10. $75 \div 15$ | 11. $102 - 12$           | 12. $34 + 28$   |
| $14 \times 4$   | $300 \div 25$    | $20 \times 5$            | $50 - 18$       |
| $18 + 18$       | $80 - 16$        | $150 \div 3$             | $75 - 62$       |
| $600 \div 12$   | $18 \times 5$    | $250 \div 2$             | $120 \div 40$   |
| $20 \times 8$   | $17 + 17$        | $12\frac{1}{2} \times 8$ | $40 - 15$       |
| $75 + 50$       | $33 - 8$         | $6\frac{1}{4} \times 4$  | $16 \times 4$   |
| $225 - 75$      | $180 \div 6$     | $100 \div 3$             | $15 \times 5$   |
| $45 \div 3$     | $11 \times 12$   | $100 \div 6$             | $30 - 16$       |
| $14 \times 3$   | $144 \div 2$     | $33\frac{1}{3} \times 2$ | $360 \div 12$   |
| $96 - 16$       | $33 + 17$        | $12\frac{1}{2} \times 3$ | $100 - 62$      |

## 52 PRACTICE IN INTERPRETING SIGNS QUICKLY

How many of these questions can you answer in one minute?

Answer in complete statements.

$$1. \quad \begin{array}{r} 7 \\ -4 \end{array} \quad \begin{array}{r} 12 \\ +5 \end{array} \quad \begin{array}{r} 6 \\ \times 4 \end{array} \quad \begin{array}{r} 15 \\ +8 \end{array} \quad \begin{array}{r} 28 \\ -9 \end{array} \quad \begin{array}{r} 8 \\ \times 7 \end{array} \quad \begin{array}{r} 48 \\ +6 \end{array} \quad \begin{array}{r} 18 \\ -5 \end{array} \quad \begin{array}{r} 16 \\ +7 \end{array} \quad \begin{array}{r} 25 \\ -12 \end{array}$$

$$2. \quad \begin{array}{r} 12 \\ \times 7 \end{array} \quad \begin{array}{r} 27 \\ -3 \end{array} \quad \begin{array}{r} 11 \\ +8 \end{array} \quad \begin{array}{r} 34 \\ -9 \end{array} \quad \begin{array}{r} 15 \\ -7 \end{array} \quad \begin{array}{r} 14 \\ +8 \end{array} \quad \begin{array}{r} 12 \\ \times 3 \end{array} \quad \begin{array}{r} 40 \\ -11 \end{array} \quad \begin{array}{r} 18 \\ +7 \end{array} \quad \begin{array}{r} 9 \\ \times 4 \end{array}$$

$$3. \quad \begin{array}{r} 17 \\ +5 \end{array} \quad \begin{array}{r} 25 \\ -6 \end{array} \quad \begin{array}{r} 15 \\ \times 2 \end{array} \quad \begin{array}{r} 40 \\ -5 \end{array} \quad \begin{array}{r} 50 \\ +25 \end{array} \quad \begin{array}{r} 50 \\ -25 \end{array} \quad \begin{array}{r} 8 \\ -8 \end{array} \quad \begin{array}{r} 8 \\ \times 8 \end{array} \quad \begin{array}{r} 8 \\ +8 \end{array} \quad \begin{array}{r} 14 \\ -9 \end{array}$$

4. $5 \times 2 - 3 = ?$	5. $9 \times 8 \div 6 = ?$	6. $30 \div 15 + 2 = ?$
$6 + 2 \times 7 = ?$	$12 - 7 \times 5 = ?$	$6 + 5 - 11 = ?$
$7 - 4 + 12 = ?$	$18 \div 9 + 1 = ?$	$25 - 20 \times 7 = ?$
$16 \div 8 \times 10 = ?$	$3 \times 7 + 5 = ?$	$14 - 7 \times 8 = ?$
$7 \times 7 - 7 = ?$	$4 + 4 \times 4 = ?$	$6 \div 6 \times 6 = ?$
$22 \div 11 \times 6 = ?$	$13 + 3 \div 8 = ?$	$8 \times 9 \div 12 = ?$
$8 \times 5 \div 2 = ?$	$10 - 10 + 3 = ?$	$3 + 11 \div 7 = ?$
$3 + 3 \times 6 = ?$	$9 \times 1 - 8 = ?$	$20 \div 5 - 4 = ?$

Tell, as you answer the questions below, whether your answer is called **sum**, **product**, **quotient**, or **remainder**.

7. $132 \div 11 = ?$	8. $175 \div 25 = ?$	9. $14 \times 3 = ?$
$12 \times 20 = ?$	$8 \times 20 = ?$	$80 \div 20 = ?$
$54 + 16 = ?$	$100 - 48 = ?$	$25 \times 8 = ?$
$39 \div 13 = ?$	$96 \div 16 = ?$	$45 - 8 = ?$
$16 \times 5 = ?$	$19 + 19 = ?$	$100 \div 5 = ?$
$17 + 17 = ?$	$96 \div 12 = ?$	$16 \times 3 = ?$
$60 \div 15 = ?$	$20 \times 20 = ?$	$13 + 25 = ?$
$25 \times 5 = ?$	$36 \div 2 = ?$	$108 \div 12 = ?$

- |                          |                          |
|--------------------------|--------------------------|
| 1. 6 is what part of 12? | 2. 5 is what part of 30? |
| 4 is what part of 16?    | 8 is what part of 40?    |
| 5 is what part of 15?    | 2 is what part of 6?     |
| 3 is what part of 9?     | 9 is what part of 18?    |
| 1 is what part of 5?     | 10 is what part of 40?   |
| 7 is what part of 14?    | 6 is what part of 48?    |
| 2 is what part of 10?    | 3 is what part of 21?    |
| 10 is what part of 60?   | 7 is what part of 63?    |
| 8 is what part of 24?    | 1 is what part of 12?    |
| 9 is what part of 36?    | 4 is what part of 20?    |
- 

- |                           |                            |
|---------------------------|----------------------------|
| 3. What part of 30 is 15? | 4. What part of 150 is 75? |
| What part of 55 is 11?    | What part of 300 is 75?    |
| What part of 100 is 20?   | What part of 45 is 15?     |
| What part of 75 is 25?    | What part of 88 is 11?     |
| What part of 144 is 12?   | What part of 44 is 22?     |
| What part of 150 is 50?   | What part of 200 is 25?    |
| What part of 60 is 15?    | What part of 48 is 16?     |
| What part of 80 is 40?    | What part of 96 is 12?     |
- 

## 5.

Nine is what part of twelve?  
Eight is what part of twelve?  
Six is what part of nine?  
Four is what part of six?  
Eight is what part of ten?  
Fifteen is what part of twenty?  
Twelve is what part of sixteen?  
Fourteen is what part of twenty-one?

## 6.

Twenty is what part of thirty?  
Twelve is what part of eighteen?  
Ten is what part of twenty-five?  
Sixteen is what part of twenty?  
Nine is what part of twenty-one?  
Twelve is what part of fifteen?  
Thirty is what part of fifty?  
Ten is what part of twelve?

For **Ratio**, and its use in solving simple problems, see Appendix.



State results only :

1.

$$\frac{12 \times 5}{6}$$

$$\frac{24 \times 9}{8}$$

$$\frac{5 \times 16}{8}$$

$$\frac{21 \times 2}{7}$$

$$\frac{28 \times 12}{7}$$

2.

$$\frac{8 \times 10}{5}$$

$$\frac{40 \times 3}{10}$$

$$\frac{20 \times 2}{4}$$

$$\frac{10 \times 48}{12}$$

$$\frac{6 \times 35}{5}$$

3.

$$\frac{3 \times 14}{7}$$

$$\frac{2 \times 25}{5}$$

$$\frac{8 \times 36}{9}$$

$$\frac{63 \times 5}{9}$$

$$\frac{10 \times 42}{7}$$

4.

$$\frac{9 \times 4}{3}$$

$$\frac{49 \times 10}{7}$$

$$\frac{33 \times 5}{11}$$

$$\frac{81 \times 11}{9}$$

$$\frac{50 \times 5}{10}$$

5.

$$\frac{15 \times 8}{5}$$

$$\frac{60 \times 11}{30}$$

$$\frac{30 \times 7}{5}$$

$$\frac{9 \times 7}{3}$$

$$\frac{77 \times 2}{11}$$

6.

$$\frac{2 \times 3 \times 3}{9}$$

$$\frac{3 \times 1 \times 100}{10}$$

$$\frac{5 \times 3 \times 20}{20}$$

$$\frac{2 \times 3 \times 35}{7}$$

$$\frac{14 \times 3 \times 5}{2}$$

7.

$$\frac{3 \times 4 \times 2}{8}$$

$$\frac{7 \times 8 \times 5}{35}$$

$$\frac{3 \times 64 \times 1}{8}$$

$$\frac{9 \times 55 \times 2}{11}$$

$$\frac{5 \times 18 \times 1}{9}$$

8.

$$\frac{3 \times 4 \times 12}{16}$$

$$\frac{4 \times 2 \times 11}{44}$$

$$\frac{3 \times 4 \times 2}{12}$$

$$\frac{6 \times 7 \times 12}{24}$$

$$\frac{40 \times 10 \times 3}{20}$$

9.

$$\frac{5 \times 2 \times 3}{25}$$

$$\frac{5 \times 12 \times 1}{6}$$

$$\frac{5 \times 36 \times 2}{18}$$

$$\frac{7 \times 6 \times 6}{42}$$

$$\frac{15 \times 8 \times 1}{30}$$

10.

$$\frac{48 \times 12}{16}$$

$$\frac{96 \times 7}{16}$$

$$\frac{120 \times 5}{30}$$

$$\frac{25 \times 3}{25}$$

11.

$$\frac{60 \times 7}{5}$$

$$\frac{140 \times 8}{20}$$

$$\frac{200 \times 9}{50}$$

$$\frac{80 \times 7}{16}$$

12.

$$\frac{65 \times 5}{13}$$

$$\frac{132 \times 6}{11}$$

$$\frac{200 \times 11}{88}$$

$$\frac{72 \times 3}{24}$$

13.

$$\frac{75 \times 8}{15}$$

$$\frac{7 \times 54}{18}$$

$$\frac{132 \times 4}{44}$$

$$\frac{60 \times 12}{24}$$

14.

$$\frac{200 \times 3}{25}$$

$$\frac{35 \times 5}{7}$$

$$\frac{34 \times 5}{17}$$

$$\frac{100 \times 1}{5}$$

State results:

1.	2.	3.	4.	5.
$\frac{10 \times 7}{5}$	$\frac{9 \times 4}{18}$	$\frac{12 \times 7}{36}$	$\frac{5 \times 6}{30}$	$\frac{3 \times 15}{5}$
$\frac{6 \times 8}{32}$	$\frac{7 \times 2}{14}$	$\frac{44 \times 3}{11}$	$\frac{3 \times 17}{15}$	$\frac{4 \times 5}{25}$
$\frac{3 \times 8}{27}$	$\frac{15 \times 7}{28}$	$\frac{10 \times 13}{26}$	$\frac{5 \times 2}{8}$	$\frac{35 \times 4}{7}$
$\frac{10 \times 7}{21}$	$\frac{8 \times 7}{40}$	$\frac{7 \times 5}{25}$	$\frac{5 \times 18}{10}$	$\frac{16 \times 7}{4}$
$\frac{9 \times 11}{99}$	$\frac{64 \times 5}{8}$	$\frac{21 \times 6}{3}$	$\frac{12 \times 5}{30}$	$\frac{2 \times 16}{4}$

6.	7.	8.	9.
$\frac{2 \times 3 \times 3}{4}$	$\frac{5 \times 4 \times 2}{8}$	$\frac{3 \times 2 \times 8}{16}$	$\frac{5 \times 2 \times 7}{35}$
$\frac{3 \times 3 \times 10}{100}$	$\frac{7 \times 8 \times 4}{40}$	$\frac{6 \times 2 \times 11}{33}$	$\frac{5 \times 12 \times 1}{3}$
$\frac{60 \times 5 \times 2}{30}$	$\frac{5 \times 6 \times 7}{12}$	$\frac{9 \times 2 \times 10}{5}$	$\frac{5 \times 4 \times 10}{20}$
$\frac{4 \times 8 \times 1}{64}$	$\frac{5 \times 5 \times 3}{25}$	$\frac{3 \times 4 \times 2}{24}$	$\frac{2 \times 3 \times 2}{33}$
$\frac{6 \times 3 \times 2}{60}$	$\frac{2 \times 3 \times 18}{6}$	$\frac{9 \times 11 \times 2}{55}$	$\frac{2 \times 1 \times 7}{6}$

10.	11.	12.	13.	14.
$\frac{5 \times 7}{4 \times 15}$	$\frac{8 \times 7}{21 \times 2}$	$\frac{4 \times 18}{9 \times 2}$	$\frac{9 \times 9}{35 \times 2}$	$\frac{6 \times 7}{5 \times 2}$
$\frac{7 \times 2}{20 \times 3}$	$\frac{15 \times 4}{2 \times 3}$	$\frac{8 \times 9}{3 \times 24}$	$\frac{50 \times 2}{5 \times 25}$	$\frac{2 \times 11}{44 \times 12}$
$\frac{27 \times 50}{9 \times 100}$	$\frac{16 \times 25}{5 \times 2}$	$\frac{4 \times 7}{7 \times 12}$	$\frac{13 \times 2}{8 \times 5}$	$\frac{11 \times 4}{3 \times 33}$
$\frac{80 \times 5}{1 \times 20}$	$\frac{56 \times 7}{7 \times 8}$	$\frac{5 \times 45}{10 \times 9}$	$\frac{12 \times 12}{3 \times 3}$	$\frac{7 \times 90}{45 \times 2}$

Give results :

1. <u>3</u> $7 \times 6$ <u>10</u> $5 \times 5$ <u>30</u> $12 \times 5$ <u>18</u> $12 \times 6$ <u>10</u> $5 \times 14$	2. <u>8</u> $32 \times 5$ <u>4</u> $17 \times 2$ <u>3</u> $27 \times 4$ <u>2</u> $7 \times 10$ <u>35</u> $14 \times 5$	3. <u>11</u> $7 \times 22$ <u>20</u> $3 \times 15$ <u>32</u> $11 \times 8$ <u>11</u> $44 \times 5$ <u>21</u> $3 \times 4$	4. <u>15</u> $6 \times 5$ <u>8</u> $5 \times 2$ <u>75</u> $4 \times 25$ <u>25</u> $5 \times 8$ <u>5</u> $8 \times 35$	5. <u>36</u> $7 \times 12$ <u>7</u> $4 \times 35$ <u>9</u> $6 \times 2$ <u>49</u> $7 \times 3$ <u>6</u> $10 \times 18$
6. <u>21</u> $5 \times 3 \times 7$ <u>32</u> $5 \times 8 \times 3$ <u>11</u> $2 \times 33 \times 5$ <u>20</u> $7 \times 5 \times 3$ <u>8</u> $3 \times 24 \times 5$	7. <u>12</u> $8 \times 4 \times 5$ <u>45</u> $9 \times 2 \times 5$ <u>8</u> $2 \times 8 \times 5$ <u>60</u> $15 \times 1 \times 4$ <u>7</u> $35 \times 3 \times 3$	8. <u>56</u> $7 \times 2 \times 1$ <u>6</u> $4 \times 1 \times 12$ <u>16</u> $4 \times 3 \times 5$ <u>72</u> $9 \times 2 \times 2$ <u>18</u> $2 \times 7 \times 9$	9. <u>44</u> $3 \times 11 \times 5$ <u>15</u> $3 \times 45 \times 2$ <u>50</u> $5 \times 2 \times 7$ <u>36</u> $6 \times 5 \times 2$ <u>25</u> $3 \times 100 \times 2$	
10. <u>20 \times 7</u> <u>14 \times 60</u> <u>6 \times 32</u> <u>8 \times 3</u> <u>16 \times 3</u> <u>5 \times 24</u> <u>2 \times 18</u> <u>24 \times 2</u>	11. <u>18 \times 15</u> <u>45 \times 3</u> <u>5 \times 12</u> <u>48 \times 3</u> <u>4 \times 7</u> <u>9 \times 8</u> <u>27 \times 3</u> <u>9 \times 2</u>	12. <u>7 \times 23</u> <u>10 \times 21</u> <u>6 \times 2</u> <u>4 \times 9</u> <u>5 \times 14</u> <u>35 \times 2</u> <u>60 \times 12</u> <u>4 \times 15</u>	13. <u>50 \times 4</u> <u>3 \times 25</u> <u>5 \times 11</u> <u>88 \times 8</u> <u>56 \times 3</u> <u>6 \times 8</u> <u>2 \times 21</u> <u>5 \times 7</u>	14. <u>16 \times 5</u> <u>5 \times 8</u> <u>12 \times 20</u> <u>5 \times 8</u> <u>63 \times 5</u> <u>9 \times 10</u> <u>48 \times 2</u> <u>20 \times 6</u>

Give results :

$$\begin{array}{r} 1. \quad 7 \times 12 \\ \quad \quad 6 \\ \hline 8 \times 5 \\ \quad \quad 20 \\ \hline 7 \times 30 \\ \quad \quad 21 \\ \hline 9 \times 8 \\ \quad \quad 3 \\ \hline 10 \times 11 \\ \quad \quad 44 \\ \hline 3 \times 25 \\ \quad \quad 5 \end{array}$$

$$\begin{array}{r} 2. \quad 3 \\ \hline 7 \times 6 \\ \quad \quad 12 \\ \hline 60 \times 3 \\ \quad \quad 45 \\ \hline 2 \times 9 \\ \quad \quad 8 \\ \hline 16 \times 7 \\ \quad \quad 33 \\ \hline 7 \times 11 \\ \quad \quad 10 \\ \hline 5 \times 8 \end{array}$$

$$\begin{array}{r} 3. \quad 3 \times 5 \\ \quad \quad 6 \times 3 \\ \hline 10 \times 8 \\ \quad \quad 4 \times 5 \\ \hline 3 \times 7 \\ \quad \quad 6 \times 21 \\ \hline 8 \times 2 \\ \quad \quad 3 \times 40 \\ \hline 4 \times 9 \\ \quad \quad 27 \times 2 \\ \hline 5 \times 12 \\ \quad \quad 6 \times 10 \end{array}$$

$$\begin{array}{r} 4. \quad 9 \times 6 \times 2 \\ \quad \quad 12 \\ \hline 8 \times 3 \times 5 \\ \quad \quad 4 \\ \hline 7 \times 2 \times 11 \\ \quad \quad 14 \\ \hline 5 \times 9 \times 12 \\ \quad \quad 36 \\ \hline 7 \times 25 \times 2 \\ \quad \quad 50 \\ \hline 40 \times 2 \times 5 \\ \quad \quad 20 \end{array}$$

$$\begin{array}{r} 5. \quad 5 \times 4 \\ \quad \quad 36 \\ \hline 6 \times 7 \\ \quad \quad 42 \\ \hline 2 \times 9 \\ \quad \quad 27 \\ \hline 50 \times 4 \\ \quad \quad 40 \\ \hline 28 \times 5 \\ \quad \quad 7 \end{array}$$

$$\begin{array}{r} 6. \quad 4 \\ \hline 12 \times 7 \\ \quad \quad 20 \\ \hline 15 \times 4 \\ \quad \quad 7 \\ \hline 6 \times 35 \\ \quad \quad 48 \\ \hline 6 \times 5 \\ \quad \quad 18 \\ \hline 9 \times 10 \end{array}$$

$$\begin{array}{r} 7. \quad 9 \times 11 \\ \quad \quad 8 \times 33 \\ \hline 15 \times 4 \\ \quad \quad 8 \times 3 \\ \hline 10 \times 25 \\ \quad \quad 5 \times 2 \\ \hline 36 \times 3 \\ \quad \quad 12 \times 4 \\ \hline 18 \times 4 \\ \quad \quad 2 \times 27 \end{array}$$

$$\begin{array}{r} 8. \quad 10 \times 11 \times 8 \\ \quad \quad 90 \\ \hline 2 \times 3 \times 28 \\ \quad \quad 7 \\ \hline 6 \times 15 \times 2 \\ \quad \quad 75 \\ \hline 15 \\ \hline 3 \times 4 \times 2 \\ \quad \quad 48 \\ \hline 8 \times 5 \times 5 \end{array}$$

$$\begin{array}{r} 9. \quad 4 \times 11 \\ \quad \quad 20 \\ \hline 10 \times 18 \\ \quad \quad 9 \\ \hline 12 \times 7 \\ \quad \quad 60 \\ \hline 8 \times 7 \\ \quad \quad 49 \\ \hline 6 \times 9 \\ \quad \quad 45 \end{array}$$

$$\begin{array}{r} 10. \quad 63 \\ \hline 4 \times 7 \\ \quad \quad 30 \\ \hline 8 \times 15 \\ \quad \quad 22 \times 6 \\ \hline 11 \\ \hline 26 \times 4 \\ \quad \quad 13 \\ \hline 30 \\ \hline 6 \times 7 \end{array}$$

$$\begin{array}{r} 11. \quad 7 \times 8 \\ \quad \quad 24 \times 3 \\ \hline 12 \times 11 \\ \quad \quad 7 \times 60 \\ \hline 25 \times 6 \\ \quad \quad 3 \times 50 \\ \hline 8 \times 9 \\ \quad \quad 5 \times 16 \\ \hline 7 \times 15 \\ \quad \quad 45 \times 49 \end{array}$$

$$\begin{array}{r} 12. \quad 8 \\ \hline 3 \times 5 \times 24 \\ \quad \quad 22 \\ \hline 55 \times 4 \times 7 \\ \quad \quad 6 \\ \hline 9 \times 4 \times 5 \\ \quad \quad 84 \\ \hline 7 \times 10 \times 2 \\ \quad \quad 56 \\ \hline 9 \times 5 \times 5 \end{array}$$

Name two factors that make

1. 4	2. 16	3. 28	4. 44	5. 60	6. 80
6	18	30	45	63	81
8	20	32	48	64	84
9	21	33	49	66	88
10	22	35	50	70	90
12	24	36	54	72	96
14	25	40	55	75	99
15	27	42	56	77	100

---

Name two groups of factors making

1. 30	2. 36	3. 40	4. 20	5. 50	6. 150
42	18	16	48	100	160
60	72	80	90	200	180
12	24	28	32	120	240

Name the two equal factors of

1. 9	2. 25	3. 4	4. 16	5. 36	6. 144
64	81	49	100	121	400

---

Separate each of these numbers into 3 factors:

1. 27	2. 16	3. 66	4. 50	5. 56	6. 36
12	24	20	28	32	90
63	60	48	72	18	44
40	45	30	80	70	75

Name two factors common to

1. 12 and 18	2. 50 and 30	3. 28 and 56
24 and 36	64 and 80	54 and 66
15 and 30	21 and 63	40 and 64
14 and 42	22 and 132	45 and 30
18 and 36	35 and 70	75 and 90

1, 2, 3,	5,	7,	11,	13,	17,	19,
4,	6,	8, 9, 10,	12,	14, 15, 16,	18,	20.

Can the numbers above the line be separated into factors?

Can the numbers below the line be separated into factors?

What name is given to numbers which cannot be factored?

What name is given to all other numbers?

Learn the prime numbers from 1 to 20.

Learn the composite numbers from 1 to 20.

All the composite numbers under 100 can be divided by some number less than 10.

Tell whether each of the following numbers is **prime** or **composite** :

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
9	29	65	20	32	76	96	88	22	28
35	62	24	31	69	16	55	97	61	54
71	43	83	66	86	48	19	68	52	89
11	26	14	47	92	17	33	21	77	72
44	15	36	25	12	30	46	45	93	84
27	73	70	81	49	64	34	53	40	75
59	95	57	90	67	41	37	99	98	80
13	50	18	51	38	58	60	87	39	91
82	85	10	78	94	79	74	56	23	63

Separate the following numbers into their prime factors :

1. 21	2. 60	3. 27	4. 48	5. 64	6. 99	7. 49	8. 82
36	55	39	66	70	25	35	30
40	32	80	84	33	34	28	57
88	90	22	12	26	95	56	72
63	75	45	24	81	20	18	93
54	44	50	77	46	96	51	62

What prime numbers will exactly divide

1. 18?	2. 80?	3. 48?	4. 56?	5. 22?	6. 25?
84?	45?	90?	21?	35?	44?
50?	30?	63?	33?	40?	15?
20?	64?	36?	42?	72?	39?
66?	32?	54?	70?	49?	75?
24?	81?	60?	27?	28?	96?

---

Name the greatest number that will exactly divide

7.	8.	9.	10.
9 and 12	20 and 40	12, 18, and 30	30, 60, and 75
10 and 12	15 and 30	10, 20, and 45	22, 33, and 77
10 and 15	30 and 50	9, 12, and 15	8, 12, and 20
16 and 24	14 and 28	15, 21, and 30	18, 27, and 63
18 and 30	21 and 35	8, 24, and 40	30, 36, and 60
24 and 36	32 and 56	21, 42, and 56	10, 11, and 12
30 and 45	40 and 64	2, 3, and 4	15, 18, and 33
20 and 25	12 and 36	14, 28, and 7	4, 12, and 20

---

Name the least number that will exactly contain

11.	12.	13.	14.
4 and 6	7 and 8	2, 4, and 6	3, 4, and 9
5 and 8	8 and 12	3, 2, and 4	12, 2, and 3
2 and 11	6 and 8	5, 10, and 12	2, 5, and 20
7 and 3	8 and 24	2, 4, and 5	4, 3, and 9
8 and 4	9 and 5	8, 4, and 16	6, 5, and 15
4 and 10	6 and 15	3, 5, and 10	12, 3, and 5
6 and 9	10 and 15	7, 2, and 4	3, 4, and 5
3 and 12	6 and 7	3, 6, and 18	6, 7, and 14

Change to whole or mixed numbers :

1.	2.	3.	4.	5.	6.	7.	8.
$\frac{4}{3}$	$\frac{2}{3}$	$\frac{15}{8}$	$\frac{25}{5}$	$\frac{40}{10}$	$\frac{32}{8}$	$\frac{66}{11}$	$\frac{60}{15}$
$\frac{6}{3}$	$\frac{12}{4}$	$\frac{48}{8}$	$\frac{63}{9}$	$\frac{36}{3}$	$\frac{18}{9}$	$\frac{60}{12}$	$\frac{84}{12}$
$\frac{8}{3}$	$\frac{15}{3}$	$\frac{18}{2}$	$\frac{56}{7}$	$\frac{48}{8}$	$\frac{56}{8}$	$\frac{64}{8}$	$\frac{80}{8}$
$\frac{3}{3}$	$\frac{21}{7}$	$\frac{16}{8}$	$\frac{49}{7}$	$\frac{44}{11}$	$\frac{45}{5}$	$\frac{70}{7}$	$\frac{99}{9}$
$\frac{10}{2}$	$\frac{20}{5}$	$\frac{35}{5}$	$\frac{45}{9}$	$\frac{27}{3}$	$\frac{9}{9}$	$\frac{72}{12}$	$\frac{63}{7}$
$\frac{14}{7}$	$\frac{24}{8}$	$\frac{12}{2}$	$\frac{42}{6}$	$\frac{28}{4}$	$\frac{42}{7}$	$\frac{75}{25}$	$\frac{30}{6}$

---

9.	10.	11.	12.	13.	14.	15.	16.
$\frac{5}{3}$	$\frac{10}{5}$	$\frac{12}{7}$	$\frac{27}{9}$	$\frac{15}{6}$	$\frac{48}{8}$	$\frac{32}{8}$	$\frac{40}{8}$
$\frac{7}{3}$	$\frac{16}{8}$	$\frac{33}{8}$	$\frac{22}{3}$	$\frac{24}{6}$	$\frac{70}{10}$	$\frac{75}{5}$	$\frac{50}{10}$
$\frac{9}{3}$	$\frac{14}{2}$	$\frac{40}{5}$	$\frac{50}{10}$	$\frac{17}{8}$	$\frac{42}{6}$	$\frac{80}{10}$	$\frac{60}{12}$
$\frac{12}{4}$	$\frac{21}{3}$	$\frac{54}{9}$	$\frac{45}{11}$	$\frac{25}{5}$	$\frac{60}{12}$	$\frac{83}{11}$	$\frac{70}{14}$
$\frac{11}{3}$	$\frac{26}{2}$	$\frac{19}{5}$	$\frac{12}{3}$	$\frac{23}{7}$	$\frac{35}{5}$	$\frac{58}{14}$	$\frac{80}{16}$
$\frac{13}{5}$	$\frac{18}{4}$	$\frac{17}{3}$	$\frac{20}{3}$	$\frac{38}{10}$	$\frac{28}{5}$	$\frac{43}{11}$	$\frac{90}{18}$

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**Note.** In actual business operations, improper fractions are rarely changed to mixed numbers. The fractions above are as large as are ordinarily met with in the business affairs of life. The work which follows is, however, valuable for mental drill.

17.	18.	19.	20.	21.	22.	23.
$\frac{150}{12}$	$\frac{200}{20}$	$\frac{120}{10}$	$\frac{200}{25}$	$\frac{124}{8}$	$\frac{100}{10}$	$\frac{132}{4}$
$\frac{25}{3}$	$\frac{82}{4}$	$\frac{125}{25}$	$\frac{26}{16}$	$\frac{500}{25}$	$\frac{100}{8}$	$\frac{65}{13}$
$\frac{132}{12}$	$\frac{25}{5}$	$\frac{87}{3}$	$\frac{180}{11}$	$\frac{160}{7}$	$\frac{100}{6}$	$\frac{150}{3}$
$\frac{120}{6}$	$\frac{180}{12}$	$\frac{154}{11}$	$\frac{150}{12}$	$\frac{132}{4}$	$\frac{100}{12}$	$\frac{121}{11}$
$\frac{108}{8}$	$\frac{105}{15}$	$\frac{200}{8}$	$\frac{135}{10}$	$\frac{75}{15}$	$\frac{100}{9}$	$\frac{99}{9}$



## Change

1. To halves: 3, 6, 2, 7, 5, 9, 12, 8, 10, 4
  2. To sixths: 7, 4, 8, 2, 10, 3, 5, 9, 6, 7
  3. To eighths: 8, 3, 5, 12, 7, 6, 9, 2, 4, 10
  4. To fourths: 9, 6, 2, 10, 3, 5, 12, 7, 4, 8
  5. To tenths: 5, 7, 9, 2, 4, 6, 3, 8, 10, 12
  6. To thirds: 6, 4, 2, 7, 5, 3, 12, 8, 9, 10
  7. To sevenths: 4, 3, 7, 6, 8, 5, 2, 10, 12, 9
  8. To ninths: 2, 9, 3, 5, 6, 7, 4, 8, 11, 12
- 

## Change to improper fractions:

9.  $1\frac{1}{3}$ ,  $2\frac{1}{4}$ ,  $5\frac{1}{7}$ ,  $8\frac{1}{7}$ ,  $3\frac{1}{2}$ ,  $7\frac{1}{8}$ ,  $4\frac{1}{9}$ ,  $6\frac{1}{10}$ ,  $9\frac{1}{8}$
  10.  $3\frac{2}{3}$ ,  $12\frac{3}{4}$ ,  $8\frac{2}{5}$ ,  $11\frac{3}{5}$ ,  $5\frac{7}{8}$ ,  $10\frac{6}{7}$ ,  $9\frac{8}{9}$ ,  $12\frac{5}{8}$ ,  $4\frac{3}{7}$
  11.  $6\frac{4}{5}$ ,  $5\frac{7}{12}$ ,  $8\frac{3}{8}$ ,  $7\frac{1}{8}$ ,  $12\frac{3}{7}$ ,  $11\frac{4}{7}$ ,  $6\frac{5}{12}$ ,  $9\frac{2}{3}$ ,  $11\frac{3}{4}$
  12.  $8\frac{3}{10}$ ,  $16\frac{1}{2}$ ,  $6\frac{7}{10}$ ,  $20\frac{3}{4}$ ,  $10\frac{1}{7}$ ,  $2\frac{1}{15}$ ,  $25\frac{1}{4}$ ,  $9\frac{9}{10}$ ,  $5\frac{5}{9}$
  13.  $11\frac{1}{2}$ ,  $9\frac{4}{11}$ ,  $1\frac{1}{18}$ ,  $2\frac{9}{20}$ ,  $30\frac{2}{3}$ ,  $50\frac{1}{2}$ ,  $10\frac{5}{8}$ ,  $8\frac{8}{9}$ ,  $12\frac{5}{6}$
  14.  $15\frac{1}{2}$ ,  $12\frac{2}{3}$ ,  $4\frac{3}{11}$ ,  $20\frac{1}{2}$ ,  $6\frac{5}{7}$ ,  $9\frac{4}{5}$ ,  $7\frac{4}{7}$ ,  $5\frac{7}{10}$ ,  $2\frac{3}{11}$
  15.  $6\frac{4}{5}$ ,  $8\frac{1}{12}$ ,  $12\frac{7}{8}$ ,  $25\frac{1}{2}$ ,  $3\frac{6}{7}$ ,  $4\frac{5}{8}$ ,  $5\frac{2}{5}$ ,  $7\frac{5}{12}$ ,  $22\frac{1}{2}$
  16.  $11\frac{2}{3}$ ,  $13\frac{1}{2}$ ,  $20\frac{2}{3}$ ,  $33\frac{1}{3}$ ,  $16\frac{2}{3}$ ,  $8\frac{1}{3}$ ,  $6\frac{1}{4}$ ,  $12\frac{1}{2}$ ,  $8\frac{7}{8}$
- 

**Note.** See note on page 61, which applies also to the changing of mixed numbers to improper fractions, and to the work on this page.

17.  $25\frac{3}{4}$ ,  $15\frac{4}{5}$ ,  $75\frac{1}{2}$ ,  $60\frac{3}{10}$ ,  $12\frac{5}{12}$ ,  $40\frac{3}{5}$ ,  $50\frac{2}{3}$ ,  $30\frac{8}{10}$
18.  $50\frac{5}{8}$ ,  $12\frac{7}{11}$ ,  $18\frac{1}{2}$ ,  $20\frac{5}{8}$ ,  $25\frac{3}{5}$ ,  $30\frac{2}{7}$ ,  $75\frac{1}{4}$ ,  $60\frac{4}{5}$
19.  $40\frac{2}{3}$ ,  $80\frac{1}{8}$ ,  $100\frac{1}{4}$ ,  $16\frac{3}{4}$ ,  $18\frac{3}{10}$ ,  $21\frac{1}{2}$ ,  $40\frac{1}{3}$ ,  $25\frac{2}{3}$
20.  $37\frac{1}{2}$ ,  $62\frac{1}{2}$ ,  $90\frac{1}{3}$ ,  $80\frac{4}{5}$ ,  $70\frac{5}{8}$ ,  $60\frac{1}{4}$ ,  $100\frac{4}{5}$ ,  $45\frac{1}{2}$
21.  $50\frac{3}{10}$ ,  $40\frac{1}{2}$ ,  $30\frac{3}{4}$ ,  $20\frac{1}{5}$ ,  $42\frac{1}{2}$ ,  $15\frac{5}{8}$ ,  $30\frac{3}{10}$ ,  $70\frac{3}{4}$
22.  $10\frac{2}{15}$ ,  $12\frac{1}{20}$ ,  $35\frac{1}{2}$ ,  $100\frac{2}{3}$ ,  $10\frac{4}{25}$ ,  $21\frac{2}{3}$ ,  $12\frac{7}{12}$ ,  $90\frac{9}{10}$
23.  $75\frac{1}{2}$ ,  $40\frac{5}{8}$ ,  $75\frac{3}{4}$ ,  $90\frac{1}{5}$ ,  $16\frac{4}{5}$ ,  $22\frac{1}{2}$ ,  $150\frac{1}{2}$ ,  $121\frac{1}{2}$
24.  $55\frac{1}{2}$ ,  $11\frac{5}{11}$ ,  $50\frac{3}{5}$ ,  $200\frac{1}{2}$ ,  $14\frac{2}{3}$ ,  $17\frac{1}{2}$ ,  $20\frac{3}{7}$ ,  $11\frac{7}{12}$

Express in lowest terms:

$$1. \frac{2}{4}, \frac{3}{12}, \frac{6}{8}, \frac{5}{10}, \frac{2}{6}, \frac{7}{14}, \frac{3}{9}, \frac{2}{10}, \frac{9}{12}, \frac{3}{21}, \frac{4}{14}, \frac{2}{16}, \frac{4}{18}, \frac{2}{20}, \frac{12}{20}$$

$$2. \frac{6}{9}, \frac{6}{12}, \frac{4}{10}, \frac{4}{8}, \frac{3}{6}, \frac{4}{16}, \frac{10}{12}, \frac{8}{24}, \frac{3}{18}, \frac{5}{25}, \frac{6}{14}, \frac{6}{18}, \frac{8}{18}, \frac{5}{20}, \frac{14}{20}$$

$$3. \frac{6}{10}, \frac{4}{6}, \frac{9}{18}, \frac{8}{12}, \frac{8}{10}, \frac{6}{18}, \frac{2}{12}, \frac{12}{18}, \frac{4}{20}, \frac{8}{16}, \frac{10}{14}, \frac{10}{16}, \frac{10}{18}, \frac{6}{20}, \frac{16}{20}$$

$$4. \frac{4}{12}, \frac{10}{30}, \frac{6}{24}, \frac{15}{20}, \frac{3}{15}, \frac{18}{24}, \frac{5}{15}, \frac{12}{24}, \frac{10}{15}, \frac{16}{24}, \frac{12}{14}, \frac{12}{16}, \frac{14}{18}, \frac{8}{20}, \frac{18}{20}$$

$$5. \frac{2}{8}, \frac{2}{14}, \frac{12}{15}, \frac{6}{24}, \frac{6}{15}, \frac{10}{25}, \frac{4}{24}, \frac{15}{18}, \frac{7}{21}, \frac{14}{21}, \frac{9}{15}, \frac{14}{18}, \frac{16}{18}, \frac{10}{20}, \frac{6}{21}$$


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$$6. \frac{12}{60}, \frac{30}{45}, \frac{16}{32}, \frac{15}{45}, \frac{20}{70}, \frac{25}{75}, \frac{18}{36}, \frac{24}{72}, \frac{16}{48}, \frac{24}{36}, \frac{32}{64}, \frac{25}{30}, \frac{25}{45}, \frac{28}{63}$$

$$7. \frac{16}{40}, \frac{32}{48}, \frac{30}{75}, \frac{18}{72}, \frac{20}{45}, \frac{60}{75}, \frac{45}{55}, \frac{22}{33}, \frac{24}{48}, \frac{36}{48}, \frac{48}{64}, \frac{20}{30}, \frac{42}{45}, \frac{56}{63}$$

$$8. \frac{18}{27}, \frac{12}{30}, \frac{2}{48}, \frac{18}{60}, \frac{24}{64}, \frac{42}{60}, \frac{30}{50}, \frac{15}{50}, \frac{14}{28}, \frac{6}{64}, \frac{40}{64}, \frac{14}{35}, \frac{35}{50}, \frac{21}{63}$$

$$9. \frac{30}{60}, \frac{18}{45}, \frac{36}{72}, \frac{12}{84}, \frac{16}{80}, \frac{25}{40}, \frac{14}{49}, \frac{33}{88}, \frac{15}{75}, \frac{50}{75}, \frac{56}{64}, \frac{28}{35}, \frac{50}{60}, \frac{18}{81}$$

$$10. \frac{30}{60}, \frac{48}{96}, \frac{9}{81}, \frac{35}{56}, \frac{30}{54}, \frac{14}{63}, \frac{45}{50}, \frac{72}{80}, \frac{13}{39}, \frac{32}{40}, \frac{12}{64}, \frac{25}{35}, \frac{40}{64}, \frac{45}{81}$$


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$$11. \frac{25}{100}, \frac{12}{132}, \frac{60}{180}, \frac{50}{200}, \frac{16}{160}, \frac{20}{180}, \frac{15}{180}, \frac{24}{120}, \frac{48}{108}, \frac{30}{125}, \frac{60}{150}$$

$$12. \frac{25}{125}, \frac{75}{150}, \frac{80}{120}, \frac{90}{100}, \frac{36}{144}, \frac{55}{110}, \frac{72}{144}, \frac{6}{100}, \frac{60}{108}, \frac{60}{125}, \frac{90}{150}$$

$$13. \frac{40}{200}, \frac{32}{120}, \frac{66}{132}, \frac{25}{175}, \frac{30}{110}, \frac{42}{128}, \frac{13}{280}, \frac{24}{144}, \frac{84}{108}, \frac{50}{125}, \frac{24}{150}$$

$$14. \frac{77}{132}, \frac{30}{100}, \frac{25}{225}, \frac{45}{135}, \frac{33}{165}, \frac{60}{240}, \frac{30}{180}, \frac{120}{180}, \frac{36}{108}, \frac{75}{125}, \frac{15}{150}$$

$$15. \frac{120}{150}, \frac{110}{130}, \frac{125}{200}, \frac{150}{175}, \frac{120}{360}, \frac{200}{250}, \frac{140}{210}, \frac{110}{330}, \frac{100}{108}, \frac{100}{125}, \frac{100}{150}$$

Is it sensible to divide by the **largest possible number**? What reason can you give for your answer?

Change to higher terms :

1.  $\frac{1}{2}, \frac{1}{3}, \frac{2}{3}, \frac{1}{4}, \frac{3}{8}, \frac{2}{4}, \frac{1}{5}, \frac{2}{4}, \frac{1}{6}, \frac{2}{6}$ .
  2.  $\frac{1}{7}, \frac{2}{8}, \frac{3}{8}, \frac{4}{4}, \frac{5}{7}, \frac{6}{8}, \frac{2}{8}, \frac{3}{7}, \frac{1}{8}, \frac{2}{8}$
  3.  $\frac{3}{7}, \frac{4}{8}, \frac{5}{8}, \frac{3}{8}, \frac{4}{7}, \frac{1}{10}, \frac{4}{8}, \frac{1}{8}, \frac{3}{8}, \frac{5}{8}$
  4.  $\frac{6}{7}, \frac{7}{8}, \frac{2}{8}, \frac{3}{10}, \frac{7}{8}, \frac{6}{9}, \frac{5}{10}, \frac{5}{8}, \frac{6}{8}, \frac{7}{10}$
- 

5. To twentieths :

$$\frac{1}{2}, \frac{1}{4}, \frac{3}{4}, \frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}, \frac{1}{10}, \frac{3}{10}, \frac{7}{10}$$

6. To twenty-fourths :

$$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{5}{8}, \frac{3}{8}, \frac{5}{8}, \frac{7}{8}, \frac{1}{12}, \frac{5}{12}, \frac{7}{12}$$

7. To thirtieths :

$$\frac{1}{2}, \frac{2}{3}, \frac{1}{5}, \frac{4}{5}, \frac{1}{6}, \frac{5}{6}, \frac{3}{10}, \frac{9}{10}, \frac{2}{15}, \frac{11}{15}$$

8. To thirty-sixths :

$$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{5}{8}, \frac{3}{8}, \frac{5}{8}, \frac{7}{12}, \frac{11}{12}, \frac{1}{18}, \frac{5}{18}$$

9. To fortieths :

$$\frac{1}{2}, \frac{3}{4}, \frac{2}{5}, \frac{4}{5}, \frac{1}{8}, \frac{7}{8}, \frac{1}{10}, \frac{9}{10}, \frac{1}{20}, \frac{7}{20}$$

10. To forty-eighths :

$$\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{5}{8}, \frac{3}{8}, \frac{5}{8}, \frac{1}{12}, \frac{7}{12}, \frac{1}{18}, \frac{1}{24}$$


---

Change to a like denominator :

11.

$$\begin{aligned} \frac{5}{7} \text{ and } \frac{8}{9} \\ \frac{3}{11} \text{ and } \frac{1}{10} \\ \frac{4}{18} \text{ and } \frac{9}{80} \\ \frac{1}{18} \text{ and } \frac{2}{5} \\ \frac{3}{8} \text{ and } \frac{8}{9} \end{aligned}$$

12.

$$\begin{aligned} \frac{5}{12} \text{ and } \frac{3}{7} \\ \frac{1}{30} \text{ and } \frac{2}{3} \\ \frac{3}{25} \text{ and } \frac{2}{3} \\ \frac{3}{11} \text{ and } \frac{1}{8} \\ \frac{7}{12} \text{ and } \frac{5}{48} \end{aligned}$$

13.

$$\begin{aligned} \frac{1}{2} \text{ and } \frac{1}{18} \\ \frac{8}{9} \text{ and } \frac{2}{20} \\ \frac{5}{14} \text{ and } \frac{2}{3} \\ \frac{7}{80} \text{ and } \frac{3}{4} \\ \frac{1}{3} \text{ and } \frac{1}{40} \end{aligned}$$

14.

$$\begin{aligned} \frac{7}{12} \text{ and } \frac{5}{8} \\ \frac{5}{11} \text{ and } \frac{5}{9} \\ \frac{3}{40} \text{ and } \frac{1}{3} \\ \frac{7}{12} \text{ and } \frac{3}{20} \\ \frac{1}{15} \text{ and } \frac{1}{18} \end{aligned}$$

Change to their least common denominator :

1. $\frac{1}{2}$ and $\frac{1}{4}$	2. $\frac{1}{2}$ and $\frac{1}{7}$	3. $\frac{1}{3}$ and $\frac{1}{8}$	4. $\frac{1}{3}$ and $\frac{1}{9}$
$\frac{1}{2}$ and $\frac{1}{3}$	$\frac{1}{3}$ and $\frac{1}{8}$	$\frac{1}{6}$ and $\frac{1}{8}$	$\frac{1}{6}$ and $\frac{1}{7}$
$\frac{1}{4}$ and $\frac{1}{3}$	$\frac{1}{3}$ and $\frac{1}{7}$	$\frac{1}{2}$ and $\frac{1}{8}$	$\frac{1}{6}$ and $\frac{1}{9}$
$\frac{1}{5}$ and $\frac{1}{3}$	$\frac{1}{4}$ and $\frac{1}{7}$	$\frac{1}{3}$ and $\frac{1}{9}$	$\frac{1}{7}$ and $\frac{1}{8}$
$\frac{1}{6}$ and $\frac{1}{4}$	$\frac{1}{7}$ and $\frac{1}{8}$	$\frac{1}{4}$ and $\frac{1}{9}$	$\frac{1}{7}$ and $\frac{1}{9}$
$\frac{1}{3}$ and $\frac{1}{5}$	$\frac{1}{6}$ and $\frac{1}{2}$	$\frac{1}{4}$ and $\frac{1}{5}$	$\frac{1}{8}$ and $\frac{1}{2}$
$\frac{1}{5}$ and $\frac{1}{6}$	$\frac{1}{6}$ and $\frac{1}{3}$	$\frac{1}{4}$ and $\frac{1}{6}$	$\frac{1}{3}$ and $\frac{1}{10}$
$\frac{1}{5}$ and $\frac{1}{7}$	$\frac{1}{2}$ and $\frac{1}{10}$	$\frac{1}{5}$ and $\frac{1}{4}$	$\frac{1}{8}$ and $\frac{1}{9}$

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5. $\frac{1}{2}$ , $\frac{1}{3}$ , and $\frac{1}{4}$	6. $\frac{1}{2}$ , $\frac{1}{3}$ , and $\frac{1}{6}$	7. $\frac{1}{7}$ , $\frac{1}{2}$ , and $\frac{1}{14}$
$\frac{1}{2}$ , $\frac{1}{4}$ , and $\frac{1}{5}$	$\frac{1}{6}$ , $\frac{1}{4}$ , and $\frac{1}{2}$	$\frac{1}{3}$ , $\frac{1}{6}$ , and $\frac{1}{10}$
$\frac{1}{2}$ , $\frac{1}{4}$ , and $\frac{1}{8}$	$\frac{1}{6}$ , $\frac{1}{2}$ , and $\frac{1}{5}$	$\frac{1}{4}$ , $\frac{1}{5}$ , and $\frac{1}{10}$
$\frac{1}{2}$ , $\frac{1}{3}$ , and $\frac{1}{8}$	$\frac{1}{8}$ , $\frac{1}{3}$ , and $\frac{1}{4}$	$\frac{1}{10}$ , $\frac{1}{4}$ , and $\frac{1}{2}$
$\frac{1}{2}$ , $\frac{1}{8}$ , and $\frac{1}{5}$	$\frac{1}{8}$ , $\frac{1}{4}$ , and $\frac{1}{5}$	$\frac{1}{8}$ , $\frac{1}{2}$ , and $\frac{1}{10}$
$\frac{1}{3}$ , $\frac{1}{4}$ , and $\frac{1}{5}$	$\frac{1}{6}$ , $\frac{1}{8}$ , and $\frac{1}{2}$	$\frac{1}{6}$ , $\frac{1}{12}$ , and $\frac{1}{3}$
$\frac{1}{3}$ , $\frac{1}{5}$ , and $\frac{1}{15}$	$\frac{1}{3}$ , $\frac{1}{5}$ , and $\frac{1}{8}$	$\frac{1}{4}$ , $\frac{1}{3}$ , and $\frac{1}{6}$
$\frac{1}{4}$ , $\frac{1}{2}$ , and $\frac{1}{8}$	$\frac{1}{2}$ , $\frac{1}{5}$ , and $\frac{1}{10}$	$\frac{1}{12}$ , $\frac{1}{8}$ , and $\frac{1}{6}$

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8. $\frac{2}{3}$ and $\frac{3}{4}$	9. $\frac{3}{4}$ and $\frac{5}{8}$	10. $\frac{3}{4}$ and $\frac{5}{9}$	11. $\frac{2}{3}$ and $\frac{4}{5}$
$\frac{3}{4}$ and $\frac{4}{5}$	$\frac{3}{5}$ and $\frac{4}{7}$	$\frac{5}{8}$ and $\frac{4}{7}$	$\frac{3}{4}$ and $\frac{2}{5}$
$\frac{2}{3}$ and $\frac{2}{5}$	$\frac{5}{9}$ and $\frac{2}{3}$	$\frac{3}{4}$ and $\frac{9}{7}$	$\frac{7}{10}$ and $\frac{4}{5}$
$\frac{3}{7}$ and $\frac{2}{3}$	$\frac{3}{8}$ and $\frac{2}{3}$	$\frac{7}{8}$ and $\frac{2}{3}$	$\frac{3}{4}$ and $\frac{5}{12}$
$\frac{5}{8}$ and $\frac{2}{3}$	$\frac{3}{4}$ and $\frac{5}{8}$	$\frac{4}{5}$ and $\frac{5}{8}$	$\frac{3}{10}$ and $\frac{3}{4}$
$\frac{5}{8}$ and $\frac{2}{5}$	$\frac{2}{7}$ and $\frac{2}{8}$	$\frac{7}{8}$ and $\frac{5}{8}$	$\frac{1}{12}$ and $\frac{1}{5}$

Name one fraction equivalent to each of the following:

In lower terms:

1.  $\frac{5}{10}, \frac{6}{8}, \frac{9}{15}, \frac{16}{20}, \frac{4}{8}, \frac{3}{9}, \frac{8}{12}, \frac{6}{15}, \frac{5}{20}, \frac{10}{25}, \frac{6}{9}, \frac{4}{12}, \frac{15}{20}, \frac{16}{24}, \frac{30}{35}$

2.  $\frac{6}{12}, \frac{10}{15}, \frac{4}{16}, \frac{6}{18}, \frac{10}{12}, \frac{9}{21}, \frac{4}{14}, \frac{14}{16}, \frac{8}{24}, \frac{30}{30}, \frac{4}{20}, \frac{8}{18}, \frac{7}{21}, \frac{15}{25}$

In higher terms:

3.  $\frac{3}{4}, \frac{7}{8}, \frac{1}{2}, \frac{5}{6}, \frac{2}{3}, \frac{3}{10}, \frac{5}{9}, \frac{6}{7}, \frac{1}{5}, \frac{7}{12}, \frac{1}{3}, \frac{1}{4}, \frac{4}{5}, \frac{3}{8}, \frac{5}{12}$

4.  $\frac{2}{5}, \frac{1}{6}, \frac{2}{7}, \frac{3}{5}, \frac{1}{8}, \frac{2}{9}, \frac{9}{10}, \frac{3}{7}, \frac{4}{5}, \frac{3}{11}, \frac{5}{7}, \frac{5}{8}, \frac{4}{9}, \frac{7}{10}, \frac{1}{6}$

Which is the greater:

5. $\frac{1}{2}$ or $\frac{1}{3}$ ?	6. $\frac{1}{3}$ or $\frac{3}{8}$ ?	7. $\frac{1}{3}$ or $\frac{2}{5}$ ?	8. $\frac{1}{2}$ or $\frac{5}{8}$ ?
$\frac{1}{4}$ or $\frac{1}{2}$ ?	$\frac{1}{3}$ or $\frac{3}{8}$ ?	$\frac{1}{2}$ or $\frac{4}{5}$ ?	$\frac{2}{3}$ or $\frac{7}{12}$ ?
$\frac{1}{2}$ or $\frac{2}{4}$ ?	$\frac{1}{4}$ or $\frac{1}{5}$ ?	$\frac{1}{3}$ or $\frac{2}{5}$ ?	$\frac{1}{6}$ or $\frac{1}{12}$ ?
$\frac{1}{3}$ or $\frac{1}{4}$ ?	$\frac{1}{5}$ or $\frac{1}{3}$ ?	$\frac{1}{3}$ or $\frac{5}{9}$ ?	$\frac{5}{8}$ or $\frac{10}{12}$ ?
$\frac{2}{3}$ or $\frac{3}{5}$ ?	$\frac{1}{4}$ or $\frac{2}{5}$ ?	$\frac{1}{4}$ or $\frac{5}{8}$ ?	$\frac{1}{4}$ or $\frac{1}{12}$ ?
$\frac{1}{2}$ or $\frac{2}{5}$ ?	$\frac{1}{5}$ or $\frac{1}{6}$ ?	$\frac{3}{4}$ or $\frac{5}{8}$ ?	$\frac{4}{4}$ or $\frac{6}{8}$ ?
$\frac{1}{2}$ or $\frac{4}{5}$ ?	$\frac{2}{3}$ or $\frac{5}{8}$ ?	$\frac{1}{5}$ or $\frac{3}{10}$ ?	$\frac{2}{3}$ or $\frac{5}{10}$ ?
$\frac{1}{3}$ or $\frac{1}{6}$ ?	$\frac{3}{8}$ or $\frac{1}{2}$ ?	$\frac{1}{2}$ or $\frac{5}{10}$ ?	$\frac{2}{3}$ or $\frac{10}{15}$ ?

Which is the greatest:

9. $\frac{1}{2}, \frac{2}{3},$ or $\frac{3}{4}$ ?	10. $\frac{2}{5}, \frac{3}{7},$ or $\frac{11}{15}$ ?	11. $\frac{4}{20}, \frac{1}{4},$ or $\frac{3}{10}$ ?
$\frac{5}{8}, \frac{3}{5},$ or $\frac{10}{15}$ ?	$\frac{6}{8}, \frac{2}{3},$ or $\frac{12}{18}$ ?	$\frac{3}{5}, \frac{3}{7},$ or $\frac{3}{8}$ ?
$\frac{1}{4}, \frac{3}{8},$ or $\frac{5}{16}$ ?	$\frac{2}{3}, \frac{7}{12},$ or $\frac{15}{24}$ ?	$\frac{7}{16}, \frac{1}{2},$ or $\frac{5}{8}$ ?
$\frac{2}{3}, \frac{7}{12},$ or $\frac{14}{24}$ ?	$\frac{4}{5}, \frac{7}{10},$ or $\frac{14}{20}$ ?	$\frac{5}{8}, \frac{7}{12},$ or $\frac{3}{4}$ ?
$\frac{2}{9}, \frac{5}{18},$ or $\frac{1}{6}$ ?	$\frac{1}{2}, \frac{5}{9},$ or $\frac{1}{3}$ ?	$\frac{7}{9}, \frac{5}{8},$ or $\frac{2}{3}$ ?
$\frac{7}{10}, \frac{3}{4},$ or $\frac{13}{20}$ ?	$\frac{2}{3}, \frac{7}{12},$ or $\frac{5}{8}$ ?	$\frac{5}{8}, \frac{5}{7},$ or $\frac{5}{9}$ ?

Find the sum of

1.

$$\begin{aligned} &\frac{1}{5}, \frac{2}{5}, \text{ and } \frac{3}{5} \\ &\frac{5}{7}, \frac{5}{7}, \text{ and } \frac{2}{7} \\ &\frac{3}{8}, \frac{7}{8}, \text{ and } \frac{5}{8} \\ &\frac{4}{9}, \frac{7}{9}, \text{ and } \frac{5}{9} \\ &\frac{3}{10}, \frac{7}{10}, \text{ and } \frac{9}{10} \\ &\frac{4}{11}, \frac{3}{11}, \text{ and } \frac{9}{11} \\ &\frac{4}{15}, \frac{8}{15}, \text{ and } \frac{1}{15} \\ &\frac{1}{20}, \frac{3}{20}, \text{ and } \frac{11}{20} \end{aligned}$$

2.

$$\begin{aligned} &\frac{1}{2} \text{ and } \frac{1}{10} \\ &\frac{1}{6} \text{ and } \frac{1}{3} \\ &\frac{1}{8} \text{ and } \frac{1}{4} \\ &\frac{1}{10} \text{ and } \frac{1}{5} \\ &\frac{1}{9} \text{ and } \frac{1}{3} \\ &\frac{1}{8} \text{ and } \frac{1}{2} \\ &\frac{1}{12} \text{ and } \frac{1}{4} \\ &\frac{1}{15} \text{ and } \frac{1}{3} \end{aligned}$$

3.

$$\begin{aligned} &\frac{1}{2} \text{ and } \frac{5}{8} \\ &\frac{1}{3} \text{ and } \frac{2}{3} \\ &\frac{1}{8} \text{ and } \frac{3}{4} \\ &\frac{1}{4} \text{ and } \frac{7}{8} \\ &\frac{1}{12} \text{ and } \frac{3}{4} \\ &\frac{1}{6} \text{ and } \frac{5}{12} \\ &\frac{1}{9} \text{ and } \frac{2}{3} \\ &\frac{1}{7} \text{ and } \frac{5}{14} \end{aligned}$$

4.

$$\begin{aligned} &\frac{1}{2} \text{ and } \frac{1}{3} \\ &\frac{1}{3} \text{ and } \frac{1}{4} \\ &\frac{1}{4} \text{ and } \frac{1}{5} \\ &\frac{1}{2} \text{ and } \frac{1}{5} \\ &\frac{1}{7} \text{ and } \frac{1}{4} \\ &\frac{1}{3} \text{ and } \frac{1}{5} \\ &\frac{1}{5} \text{ and } \frac{1}{7} \\ &\frac{1}{7} \text{ and } \frac{1}{2} \end{aligned}$$

5.

$$\begin{aligned} &\frac{2}{3} \text{ and } \frac{2}{3} \\ &\frac{4}{5} \text{ and } \frac{7}{15} \\ &\frac{3}{10} \text{ and } \frac{3}{5} \\ &\frac{3}{4} \text{ and } \frac{11}{12} \\ &\frac{5}{8} \text{ and } \frac{7}{16} \\ &\frac{5}{6} \text{ and } \frac{2}{3} \\ &\frac{3}{4} \text{ and } \frac{5}{8} \\ &\frac{4}{7} \text{ and } \frac{8}{21} \end{aligned}$$

6.

$$\begin{aligned} &\frac{7}{12} \text{ and } \frac{2}{3} \\ &\frac{1}{10} \text{ and } \frac{9}{20} \\ &\frac{4}{15} \text{ and } \frac{2}{5} \\ &\frac{5}{6} \text{ and } \frac{11}{18} \\ &\frac{1}{12} \text{ and } \frac{3}{4} \\ &\frac{9}{14} \text{ and } \frac{4}{7} \\ &\frac{2}{3} \text{ and } \frac{7}{24} \\ &\frac{3}{5} \text{ and } \frac{2}{25} \end{aligned}$$

7.

$$\begin{aligned} &\frac{1}{2} \text{ and } \frac{2}{3} \\ &\frac{1}{4} \text{ and } \frac{3}{5} \\ &\frac{3}{10} \text{ and } \frac{1}{3} \\ &\frac{5}{6} \text{ and } \frac{1}{2} \\ &\frac{1}{3} \text{ and } \frac{3}{4} \\ &\frac{1}{5} \text{ and } \frac{2}{3} \\ &\frac{5}{8} \text{ and } \frac{1}{3} \\ &\frac{4}{5} \text{ and } \frac{1}{2} \end{aligned}$$

8.

$$\begin{aligned} &\frac{1}{4} \text{ and } \frac{2}{3} \\ &\frac{1}{3} \text{ and } \frac{2}{5} \\ &\frac{3}{11} \text{ and } \frac{1}{4} \\ &\frac{2}{7} \text{ and } \frac{1}{5} \\ &\frac{1}{5} \text{ and } \frac{3}{4} \\ &\frac{1}{2} \text{ and } \frac{4}{7} \\ &\frac{7}{10} \text{ and } \frac{1}{6} \\ &\frac{4}{5} \text{ and } \frac{1}{8} \end{aligned}$$

9.

$$\begin{aligned} &\frac{2}{3} \text{ and } \frac{3}{4} \\ &\frac{2}{5} \text{ and } \frac{5}{8} \\ &\frac{3}{4} \text{ and } \frac{3}{5} \\ &\frac{2}{3} \text{ and } \frac{5}{8} \\ &\frac{3}{8} \text{ and } \frac{2}{3} \\ &\frac{5}{6} \text{ and } \frac{5}{8} \\ &\frac{2}{3} \text{ and } \frac{2}{7} \\ &\frac{3}{7} \text{ and } \frac{3}{4} \end{aligned}$$

10.

$$\begin{aligned} &\frac{7}{9} \text{ and } \frac{5}{6} \\ &\frac{3}{8} \text{ and } \frac{3}{5} \\ &\frac{7}{10} \text{ and } \frac{2}{3} \\ &\frac{5}{7} \text{ and } \frac{3}{4} \\ &\frac{2}{3} \text{ and } \frac{5}{7} \\ &\frac{3}{4} \text{ and } \frac{5}{6} \\ &\frac{7}{10} \text{ and } \frac{3}{4} \\ &\frac{3}{10} \text{ and } \frac{2}{3} \end{aligned}$$

11.

$$\begin{aligned} &\frac{5}{6} \text{ and } \frac{3}{10} \\ &\frac{5}{9} \text{ and } \frac{3}{4} \\ &\frac{3}{10} \text{ and } \frac{5}{9} \\ &\frac{4}{5} \text{ and } \frac{7}{9} \\ &\frac{5}{8} \text{ and } \frac{2}{7} \\ &\frac{2}{11} \text{ and } \frac{2}{3} \\ &\frac{3}{4} \text{ and } \frac{7}{11} \\ &\frac{8}{9} \text{ and } \frac{2}{5} \end{aligned}$$

12.

$$\begin{aligned} &\frac{9}{10} \text{ and } \frac{2}{3} \\ &\frac{7}{12} \text{ and } \frac{3}{5} \\ &\frac{3}{8} \text{ and } \frac{2}{9} \\ &\frac{4}{11} \text{ and } \frac{2}{3} \\ &\frac{3}{4} \text{ and } \frac{4}{5} \\ &\frac{5}{6} \text{ and } \frac{9}{7} \\ &\frac{2}{7} \text{ and } \frac{4}{5} \\ &\frac{4}{5} \text{ and } \frac{5}{8} \end{aligned}$$

- |                                 |                                  |                                 |                                  |
|---------------------------------|----------------------------------|---------------------------------|----------------------------------|
| 1. $2\frac{1}{2} + \frac{1}{2}$ | 2. $7\frac{1}{4} + 1\frac{3}{4}$ | 3. $8\frac{1}{7} + \frac{6}{7}$ | 4. $3\frac{1}{5} + \frac{5}{5}$  |
| $3\frac{1}{2} + 1\frac{1}{2}$   | $2\frac{1}{2} + \frac{1}{2}$     | $\frac{5}{7} + 3\frac{3}{7}$    | $7\frac{1}{2} + 1\frac{1}{2}$    |
| $1\frac{1}{3} + \frac{2}{3}$    | $3\frac{2}{3} + \frac{1}{3}$     | $7\frac{1}{7} + 1\frac{6}{7}$   | $\frac{8}{9} + 5\frac{8}{9}$     |
| $2\frac{1}{3} + 4\frac{1}{3}$   | $6 + 5\frac{1}{3}$               | $1\frac{5}{7} + 2\frac{4}{7}$   | $4\frac{2}{3} + 1\frac{1}{3}$    |
| $\frac{2}{3} + 6\frac{2}{3}$    | $\frac{3}{8} + 1\frac{1}{8}$     | $2\frac{2}{8} + \frac{7}{8}$    | $6\frac{7}{10} + 1\frac{3}{10}$  |
| $1\frac{1}{4} + \frac{1}{4}$    | $4\frac{1}{8} + \frac{5}{8}$     | $5\frac{3}{8} + 5\frac{5}{8}$   | $\frac{9}{10} + 8\frac{7}{10}$   |
| $3\frac{1}{4} + \frac{3}{4}$    | $5\frac{5}{8} + 1\frac{1}{8}$    | $2\frac{7}{8} + 1\frac{1}{8}$   | $7\frac{5}{12} + 1\frac{7}{12}$  |
| $5 + 2\frac{1}{4}$              | $10\frac{1}{8} + 2\frac{1}{8}$   | $\frac{5}{8} + 6\frac{7}{8}$    | $10\frac{1}{12} + 1\frac{5}{12}$ |
- 

- |                                 |                                 |                                 |                                  |
|---------------------------------|---------------------------------|---------------------------------|----------------------------------|
| 5. $5\frac{1}{2} + \frac{1}{2}$ | 6. $8\frac{1}{2} + \frac{3}{4}$ | 7. $3\frac{2}{3} + \frac{4}{3}$ | 8. $4\frac{1}{2} + 2\frac{1}{2}$ |
| $6\frac{1}{2} + \frac{1}{2}$    | $4\frac{1}{8} + 1\frac{7}{8}$   | $7\frac{2}{3} + \frac{2}{3}$    | $7\frac{1}{2} + 1\frac{1}{2}$    |
| $4\frac{1}{3} + \frac{1}{3}$    | $10\frac{1}{4} + \frac{1}{2}$   | $9\frac{5}{8} + \frac{2}{8}$    | $12\frac{1}{8} + 3\frac{1}{8}$   |
| $10\frac{1}{3} + \frac{1}{3}$   | $5\frac{1}{2} + \frac{5}{8}$    | $2\frac{2}{3} + \frac{5}{6}$    | $9\frac{1}{2} + 4\frac{1}{2}$    |
| $4\frac{1}{4} + 1\frac{1}{4}$   | $3\frac{1}{6} + \frac{2}{3}$    | $10\frac{7}{8} + 1\frac{1}{8}$  | $6\frac{1}{2} + 7\frac{7}{10}$   |
| $2\frac{1}{3} + 1\frac{1}{3}$   | $8\frac{1}{8} + \frac{3}{8}$    | $8\frac{3}{10} + \frac{2}{10}$  | $10\frac{1}{4} + 3\frac{1}{4}$   |
| $6\frac{1}{2} + 1\frac{1}{10}$  | $1\frac{1}{10} + \frac{4}{5}$   | $6\frac{5}{9} + \frac{2}{9}$    | $8\frac{1}{8} + 4\frac{1}{2}$    |
| $5\frac{1}{5} + 1\frac{1}{5}$   | $5\frac{1}{5} + \frac{2}{5}$    | $1\frac{9}{10} + \frac{1}{10}$  | $15\frac{1}{12} + 5\frac{1}{12}$ |
- 

Add:

- |                                   |                                   |                                   |                                   |                                  |                                   |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|-----------------------------------|
| 9. $14\frac{2}{3}$                | 10. $20\frac{1}{2}$               | 11. $15\frac{3}{4}$               | 12. $10\frac{1}{2}$               | 13. $24\frac{2}{3}$              | 14. $30\frac{8}{9}$               |
| <u><math>3\frac{1}{2}</math></u>  | <u><math>5\frac{1}{8}</math></u>  | <u><math>10\frac{1}{2}</math></u> | <u><math>6\frac{1}{2}</math></u>  | <u><math>8\frac{1}{2}</math></u> | <u><math>7\frac{1}{3}</math></u>  |
| $45\frac{5}{8}$                   | $50\frac{1}{4}$                   | $42\frac{1}{2}$                   | $64\frac{3}{8}$                   | $18\frac{1}{2}$                  | $75\frac{7}{12}$                  |
| <u><math>10\frac{1}{4}</math></u> | <u><math>6\frac{1}{8}</math></u>  | <u><math>12\frac{1}{4}</math></u> | <u><math>6\frac{1}{4}</math></u>  | <u><math>7\frac{1}{2}</math></u> | <u><math>25\frac{1}{2}</math></u> |
| $35\frac{1}{2}$                   | $60\frac{5}{12}$                  | $16\frac{5}{8}$                   | $200\frac{1}{2}$                  | $29\frac{1}{12}$                 | $54\frac{3}{10}$                  |
| <u><math>3\frac{2}{3}</math></u>  | <u><math>17\frac{1}{6}</math></u> | <u><math>7\frac{3}{4}</math></u>  | <u><math>37\frac{1}{4}</math></u> | <u><math>6\frac{1}{4}</math></u> | <u><math>11\frac{2}{3}</math></u> |

1.

$\frac{1}{3} + \frac{1}{6}$

$\frac{1}{3} + \frac{1}{12}$

$\frac{1}{3} + \frac{1}{8}$

$\frac{1}{3} + \frac{1}{18}$

$\frac{1}{3} + \frac{1}{15}$

5.

$\frac{2}{3} + \frac{1}{9}$

$\frac{2}{3} + \frac{1}{15}$

$\frac{2}{3} + \frac{1}{6}$

$\frac{2}{3} + \frac{1}{18}$

$\frac{2}{3} + \frac{1}{12}$

9.

$\frac{2}{3} + \frac{5}{6}$

$\frac{2}{3} + \frac{4}{9}$

$\frac{2}{3} + \frac{7}{12}$

$\frac{2}{3} + \frac{1}{6}$

$\frac{2}{3} + \frac{1}{18}$

13.

$\frac{1}{2} + \frac{1}{3}$

$\frac{1}{2} + \frac{1}{5}$

$\frac{1}{2} + \frac{1}{7}$

$\frac{1}{2} + \frac{1}{9}$

$\frac{1}{2} + \frac{1}{11}$

2.

$\frac{1}{4} + \frac{1}{20}$

$\frac{1}{4} + \frac{1}{12}$

$\frac{1}{4} + \frac{1}{2}$

$\frac{1}{4} + \frac{1}{16}$

$\frac{1}{4} + \frac{1}{8}$

6.

$\frac{3}{4} + \frac{1}{16}$

$\frac{3}{4} + \frac{1}{8}$

$\frac{3}{4} + \frac{1}{20}$

$\frac{3}{4} + \frac{1}{2}$

$\frac{3}{4} + \frac{1}{12}$

10.

$\frac{3}{4} + \frac{3}{8}$

$\frac{3}{4} + \frac{5}{12}$

$\frac{3}{4} + \frac{3}{16}$

$\frac{3}{4} + \frac{11}{20}$

$\frac{3}{4} + \frac{5}{24}$

14.

$\frac{1}{3} + \frac{1}{4}$

$\frac{1}{3} + \frac{1}{5}$

$\frac{1}{3} + \frac{1}{7}$

$\frac{1}{3} + \frac{1}{8}$

$\frac{1}{3} + \frac{1}{10}$

3.

$\frac{1}{6} + \frac{1}{2}$

$\frac{1}{6} + \frac{1}{16}$

$\frac{1}{6} + \frac{1}{12}$

$\frac{1}{6} + \frac{1}{3}$

$\frac{1}{6} + \frac{1}{24}$

7.

$\frac{5}{6} + \frac{1}{24}$

$\frac{5}{6} + \frac{1}{12}$

$\frac{5}{6} + \frac{1}{3}$

$\frac{5}{6} + \frac{1}{2}$

$\frac{5}{6} + \frac{1}{18}$

11.

$\frac{5}{6} + \frac{7}{30}$

$\frac{5}{6} + \frac{2}{3}$

$\frac{5}{6} + \frac{11}{12}$

$\frac{5}{6} + \frac{1}{6}$

$\frac{5}{6} + \frac{5}{24}$

15.

$\frac{1}{4} + \frac{1}{5}$

$\frac{1}{4} + \frac{1}{6}$

$\frac{1}{4} + \frac{1}{7}$

$\frac{1}{4} + \frac{1}{9}$

$\frac{1}{4} + \frac{1}{10}$

4.

$\frac{1}{8} + \frac{1}{4}$

$\frac{1}{8} + \frac{1}{16}$

$\frac{1}{8} + \frac{1}{2}$

$\frac{1}{8} + \frac{1}{24}$

$\frac{1}{8} + \frac{1}{24}$

8.

$\frac{3}{8} + \frac{1}{16}$

$\frac{3}{8} + \frac{1}{24}$

$\frac{3}{8} + \frac{1}{4}$

$\frac{3}{8} + \frac{1}{2}$

$\frac{3}{8} + \frac{1}{24}$

12.

$\frac{5}{8} + \frac{9}{40}$

$\frac{5}{8} + \frac{3}{4}$

$\frac{5}{8} + \frac{5}{24}$

$\frac{5}{8} + \frac{7}{16}$

$\frac{5}{8} + \frac{13}{24}$

16.

$\frac{1}{8} + \frac{1}{5}$

$\frac{1}{8} + \frac{1}{6}$

$\frac{1}{8} + \frac{1}{7}$

$\frac{1}{8} + \frac{1}{9}$

$\frac{1}{8} + \frac{1}{7}$



1.	2.	3.	4.
$2 - \frac{1}{4}$	$7 - \frac{5}{8}$	$15 - 4\frac{1}{2}$	$2 - 1\frac{1}{2}$
$3 - \frac{1}{3}$	$5 - \frac{4}{5}$	$12 - 2\frac{2}{7}$	$3 - 1\frac{2}{5}$
$4 - \frac{3}{4}$	$12 - \frac{9}{10}$	$4 - 1\frac{5}{6}$	$7 - 5\frac{1}{4}$
$6 - \frac{1}{2}$	$20 - \frac{1}{6}$	$10 - 3\frac{3}{8}$	$10 - 3\frac{3}{4}$
$9 - \frac{3}{8}$	$10 - \frac{3}{4}$	$6 - 4\frac{1}{10}$	$8 - 2\frac{1}{6}$
$8 - \frac{2}{3}$	$12 - \frac{4}{5}$	$7 - 5\frac{5}{7}$	$5 - 1\frac{3}{5}$
$7 - \frac{1}{5}$	$25 - \frac{7}{12}$	$5 - 1\frac{4}{5}$	$11 - 4\frac{5}{6}$
$5 - \frac{5}{7}$	$6 - \frac{5}{9}$	$9 - 3\frac{1}{8}$	$12 - 2\frac{1}{2}$
$2 - \frac{3}{10}$	$8 - \frac{3}{5}$	$4 - 1\frac{2}{3}$	$2 - 1\frac{1}{3}$

---

5.	6.	7.	8.
$7\frac{1}{4} - \frac{1}{8}$	$5\frac{1}{2} - 3\frac{1}{4}$	$8\frac{1}{3} - \frac{1}{4}$	$7\frac{2}{3} - \frac{2}{5}$
$2\frac{1}{2} - \frac{1}{4}$	$6\frac{1}{3} - 1\frac{1}{6}$	$3\frac{6}{7} - \frac{1}{2}$	$20\frac{9}{10} - \frac{1}{3}$
$7\frac{1}{2} - \frac{1}{10}$	$10\frac{1}{4} - 4\frac{1}{8}$	$10\frac{1}{2} - \frac{2}{5}$	$11\frac{5}{9} - \frac{1}{2}$
$3\frac{2}{3} - \frac{1}{2}$	$12\frac{3}{5} - 2\frac{1}{2}$	$6\frac{2}{3} - \frac{1}{4}$	$12\frac{1}{2} - \frac{1}{5}$
$4\frac{1}{4} - \frac{1}{8}$	$8\frac{3}{4} - 5\frac{1}{8}$	$4\frac{5}{6} - \frac{3}{4}$	$16\frac{2}{3} - \frac{3}{10}$
$6\frac{1}{3} - \frac{1}{6}$	$7\frac{5}{6} - 2\frac{1}{3}$	$5\frac{1}{2} - \frac{1}{5}$	$8\frac{8}{15} - \frac{1}{2}$
$5\frac{3}{4} - \frac{1}{2}$	$20\frac{4}{5} - 4\frac{1}{2}$	$12\frac{1}{2} - \frac{1}{7}$	$40\frac{4}{5} - \frac{7}{12}$
$8\frac{5}{6} - \frac{1}{3}$	$1\frac{5}{8} - 1\frac{1}{4}$	$4\frac{4}{7} - \frac{1}{3}$	$25\frac{1}{2} - \frac{3}{11}$

---

Subtract :

9.	10.	11.	12.	13.	14.
$14$ <u><math>5\frac{3}{4}</math></u>	$25\frac{1}{2}$ <u><math>8\frac{1}{5}</math></u>	$50$ <u><math>9\frac{3}{8}</math></u>	$36\frac{3}{4}$ <u><math>4\frac{1}{2}</math></u>	$40$ <u><math>5\frac{2}{3}</math></u>	$28$ <u><math>7\frac{5}{6}</math></u>
$35\frac{2}{3}$ <u><math>11\frac{1}{2}</math></u>	$18\frac{3}{5}$ <u><math>6\frac{1}{2}</math></u>	$42$ <u><math>7\frac{5}{8}</math></u>	$37\frac{1}{2}$ <u><math>\frac{7}{10}</math></u>	$14\frac{2}{5}$ <u><math>\frac{7}{15}</math></u>	$44$ <u><math>10\frac{1}{3}</math></u>
$100$ <u><math>37\frac{1}{2}</math></u>	$100$ <u><math>12\frac{1}{2}</math></u>	$100$ <u><math>33\frac{1}{3}</math></u>	$100$ <u><math>66\frac{2}{3}</math></u>	$100$ <u><math>87\frac{1}{2}</math></u>	$100$ <u><math>62\frac{1}{2}</math></u>

$$\begin{array}{l}
 1. \quad \frac{5}{9} - \frac{2}{9} \\
 \frac{3}{4} - \frac{1}{4} \\
 \frac{7}{8} - \frac{3}{8} \\
 \frac{9}{10} - \frac{4}{10} \\
 \frac{4}{5} - \frac{2}{5} \\
 \frac{6}{7} - \frac{5}{7} \\
 \frac{7}{10} - \frac{3}{10} \\
 \frac{11}{12} - \frac{5}{12}
 \end{array}$$

$$\begin{array}{l}
 2. \quad \frac{1}{2} - \frac{1}{4} \\
 \frac{1}{2} - \frac{1}{6} \\
 \frac{1}{3} - \frac{1}{6} \\
 \frac{1}{3} - \frac{1}{12} \\
 \frac{1}{2} - \frac{1}{8} \\
 \frac{1}{6} - \frac{1}{12} \\
 \frac{1}{3} - \frac{1}{6} \\
 \frac{1}{2} - \frac{1}{10}
 \end{array}$$

$$\begin{array}{l}
 3. \quad \frac{1}{2} - \frac{3}{8} \\
 \frac{3}{4} - \frac{1}{2} \\
 \frac{5}{6} - \frac{1}{3} \\
 \frac{2}{3} - \frac{1}{6} \\
 \frac{5}{8} - \frac{1}{2} \\
 \frac{7}{8} - \frac{1}{4} \\
 \frac{3}{10} - \frac{1}{5} \\
 \frac{7}{9} - \frac{1}{3}
 \end{array}$$

$$\begin{array}{l}
 4. \quad \frac{11}{12} - \frac{5}{6} \\
 \frac{8}{9} - \frac{2}{3} \\
 \frac{3}{4} - \frac{5}{16} \\
 \frac{3}{10} - \frac{3}{20} \\
 \frac{5}{14} - \frac{2}{7} \\
 \frac{3}{4} - \frac{5}{8} \\
 \frac{2}{3} - \frac{2}{9} \\
 \frac{9}{10} - \frac{3}{5}
 \end{array}$$

$$\begin{array}{l}
 5. \quad \frac{4}{5} - \frac{3}{4} \\
 \frac{2}{3} - \frac{5}{12} \\
 \frac{5}{6} - \frac{5}{12} \\
 \frac{3}{4} - \frac{3}{10} \\
 \frac{5}{6} - \frac{4}{5} \\
 \frac{3}{4} - \frac{2}{5} \\
 \frac{7}{8} - \frac{2}{3} \\
 \frac{11}{12} - \frac{2}{3}
 \end{array}$$

$$\begin{array}{l}
 6. \quad \frac{7}{8} - \frac{5}{6} \\
 \frac{2}{5} - \frac{3}{10} \\
 \frac{6}{7} - \frac{2}{3} \\
 \frac{5}{9} - \frac{1}{2} \\
 \frac{9}{10} - \frac{4}{5} \\
 \frac{5}{6} - \frac{3}{4} \\
 \frac{8}{9} - \frac{5}{6} \\
 \frac{7}{11} - \frac{1}{2}
 \end{array}$$

$$\begin{array}{l}
 7. \quad \frac{4}{5} - \frac{2}{3} \\
 \frac{6}{7} - \frac{1}{2} \\
 \frac{3}{4} - \frac{2}{3} \\
 \frac{3}{5} - \frac{1}{4} \\
 \frac{1}{2} - \frac{2}{7} \\
 \frac{2}{3} - \frac{2}{5} \\
 \frac{3}{4} - \frac{1}{6} \\
 \frac{7}{10} - \frac{1}{2}
 \end{array}$$

$$\begin{array}{l}
 8. \quad \frac{5}{7} - \frac{1}{2} \\
 \frac{5}{8} - \frac{1}{3} \\
 \frac{3}{7} - \frac{1}{3} \\
 \frac{5}{12} - \frac{1}{8} \\
 \frac{7}{10} - \frac{2}{3} \\
 \frac{7}{8} - \frac{4}{5} \\
 \frac{5}{8} - \frac{2}{5} \\
 \frac{1}{2} - \frac{2}{9}
 \end{array}$$

$$\begin{array}{l}
 9. \quad \frac{6}{7} - \frac{3}{4} \\
 \frac{5}{14} - \frac{2}{7} \\
 \frac{5}{12} - \frac{2}{5} \\
 \frac{3}{4} - \frac{3}{5} \\
 \frac{8}{15} - \frac{2}{5} \\
 \frac{5}{9} - \frac{5}{10} \\
 \frac{4}{11} - \frac{1}{3} \\
 \frac{7}{8} - \frac{1}{12}
 \end{array}$$

$$\begin{array}{l}
 10. \quad \frac{7}{18} - \frac{3}{8} \\
 \frac{3}{7} - \frac{2}{11} \\
 \frac{8}{15} - \frac{1}{2} \\
 \frac{11}{12} - \frac{9}{10} \\
 \frac{7}{18} - \frac{1}{3} \\
 \frac{7}{9} - \frac{2}{7} \\
 \frac{9}{10} - \frac{7}{8} \\
 \frac{11}{20} - \frac{5}{12}
 \end{array}$$

$$\begin{array}{l}
 11. \quad \frac{6}{7} - \frac{1}{6} \\
 \frac{7}{18} - \frac{5}{12} \\
 \frac{7}{9} - \frac{7}{8} \\
 \frac{8}{13} - \frac{1}{2} \\
 \frac{5}{7} - \frac{2}{11} \\
 \frac{9}{10} - \frac{5}{6} \\
 \frac{7}{15} - \frac{1}{4} \\
 \frac{9}{14} - \frac{1}{2}
 \end{array}$$

$$\begin{array}{l}
 12. \quad \frac{5}{12} - \frac{1}{16} \\
 \frac{5}{18} - \frac{1}{3} \\
 \frac{7}{9} - \frac{7}{10} \\
 \frac{21}{30} - \frac{4}{15} \\
 \frac{7}{12} - \frac{3}{8} \\
 \frac{14}{15} - \frac{5}{6} \\
 \frac{20}{20} - \frac{1}{3} \\
 \frac{1}{5} - \frac{1}{11}
 \end{array}$$

1.  $\frac{1}{2} - \frac{1}{4}$

$\frac{1}{2} - \frac{1}{12}$

$\frac{1}{2} - \frac{1}{8}$

$\frac{1}{2} - \frac{1}{10}$

$\frac{1}{2} - \frac{1}{6}$

5.  $\frac{3}{8} - \frac{1}{40}$

$\frac{3}{8} - \frac{1}{16}$

$\frac{3}{8} - \frac{1}{24}$

$\frac{3}{8} - \frac{1}{4}$

$\frac{3}{8} - \frac{1}{32}$

9.  $\frac{7}{8} - \frac{3}{4}$

$\frac{7}{8} - \frac{5}{16}$

$\frac{7}{8} - \frac{11}{24}$

$\frac{7}{8} - \frac{9}{40}$

$\frac{7}{8} - \frac{3}{32}$

13.  $\frac{1}{5} - \frac{1}{6}$

$\frac{1}{6} - \frac{1}{7}$

$\frac{1}{5} - \frac{1}{7}$

$\frac{1}{6} - \frac{1}{8}$

$\frac{1}{4} - \frac{1}{11}$

2.  $\frac{1}{3} - \frac{1}{6}$

$\frac{1}{3} - \frac{1}{15}$

$\frac{1}{3} - \frac{1}{9}$

$\frac{1}{3} - \frac{1}{18}$

$\frac{1}{3} - \frac{1}{12}$

6.  $\frac{2}{3} - \frac{1}{9}$

$\frac{2}{3} - \frac{1}{18}$

$\frac{2}{3} - \frac{1}{15}$

$\frac{2}{3} - \frac{1}{6}$

$\frac{2}{3} - \frac{1}{12}$

10.  $\frac{2}{3} - \frac{4}{9}$

$\frac{2}{3} - \frac{7}{15}$

$\frac{2}{3} - \frac{5}{12}$

$\frac{2}{3} - \frac{11}{18}$

$\frac{2}{3} - \frac{4}{21}$

14.  $\frac{1}{3} - \frac{1}{4}$

$\frac{1}{3} - \frac{1}{10}$

$\frac{1}{3} - \frac{1}{7}$

$\frac{1}{3} - \frac{1}{8}$

$\frac{1}{3} - \frac{1}{8}$

3.  $\frac{1}{4} - \frac{1}{16}$

$\frac{1}{4} - \frac{1}{20}$

$\frac{1}{4} - \frac{1}{8}$

$\frac{1}{4} - \frac{1}{12}$

$\frac{1}{4} - \frac{1}{24}$

7.  $\frac{3}{4} - \frac{1}{12}$

$\frac{3}{4} - \frac{1}{2}$

$\frac{3}{4} - \frac{1}{20}$

$\frac{3}{4} - \frac{1}{16}$

$\frac{3}{4} - \frac{1}{8}$

11.  $\frac{3}{4} - \frac{3}{8}$

$\frac{3}{4} - \frac{3}{20}$

$\frac{3}{4} - \frac{5}{16}$

$\frac{3}{4} - \frac{7}{12}$

$\frac{3}{4} - \frac{7}{24}$

15.  $\frac{1}{4} - \frac{1}{6}$

$\frac{1}{4} - \frac{1}{9}$

$\frac{1}{4} - \frac{1}{5}$

$\frac{1}{4} - \frac{1}{10}$

$\frac{1}{4} - \frac{1}{7}$

4.  $\frac{1}{6} - \frac{1}{18}$

$\frac{1}{6} - \frac{1}{30}$

$\frac{1}{6} - \frac{1}{24}$

$\frac{1}{6} - \frac{1}{12}$

$\frac{1}{6} - \frac{1}{36}$

8.  $\frac{5}{6} - \frac{1}{12}$

$\frac{5}{6} - \frac{1}{30}$

$\frac{5}{6} - \frac{1}{18}$

$\frac{5}{6} - \frac{1}{36}$

$\frac{5}{6} - \frac{1}{24}$

12.  $\frac{5}{6} - \frac{2}{3}$

$\frac{5}{6} - \frac{5}{12}$

$\frac{5}{6} - \frac{5}{18}$

$\frac{5}{6} - \frac{2}{9}$

$\frac{5}{6} - \frac{4}{15}$

16.  $\frac{1}{5} - \frac{1}{8}$

$\frac{1}{2} - \frac{1}{11}$

$\frac{1}{6} - \frac{1}{9}$

$\frac{1}{5} - \frac{1}{12}$

$\frac{1}{7} - \frac{1}{8}$

- |                                     |                                |                                     |                                |
|-------------------------------------|--------------------------------|-------------------------------------|--------------------------------|
| 1. $\frac{1}{2}$ plus $\frac{1}{2}$ | 2. $\frac{2}{3} + \frac{1}{2}$ | 3. $\frac{9}{10}$ and $\frac{1}{5}$ | 4. $\frac{7}{9} + \frac{2}{3}$ |
| $\frac{1}{2}$ less $\frac{1}{2}$    | $\frac{2}{3} - \frac{1}{2}$    | $\frac{9}{10}$ less $\frac{1}{5}$   | $\frac{7}{9} - \frac{2}{3}$    |
| $\frac{2}{3}$ plus $\frac{1}{6}$    | $\frac{3}{4} + \frac{1}{2}$    | $\frac{7}{8}$ and $\frac{3}{4}$     | $\frac{5}{12} + \frac{1}{4}$   |
| $\frac{2}{3}$ less $\frac{1}{6}$    | $\frac{3}{4} - \frac{1}{2}$    | $\frac{7}{8}$ less $\frac{3}{4}$    | $\frac{5}{12} - \frac{1}{4}$   |
| $\frac{3}{4}$ plus $\frac{3}{8}$    | $\frac{5}{5} + \frac{1}{2}$    | $\frac{5}{8}$ and $\frac{1}{3}$     | $\frac{7}{15} + \frac{2}{5}$   |
| $\frac{3}{4}$ less $\frac{3}{8}$    | $\frac{5}{5} - \frac{1}{2}$    | $\frac{5}{8}$ less $\frac{1}{3}$    | $\frac{7}{15} - \frac{2}{5}$   |
| $\frac{5}{6}$ plus $\frac{2}{3}$    | $\frac{5}{8} + \frac{1}{2}$    | $\frac{9}{10}$ and $\frac{1}{2}$    | $\frac{9}{18} + \frac{3}{8}$   |
| $\frac{5}{6}$ less $\frac{2}{3}$    | $\frac{5}{8} - \frac{1}{2}$    | $\frac{9}{10}$ less $\frac{1}{2}$   | $\frac{9}{18} - \frac{3}{8}$   |
- 

- |                                 |                               |                                 |                              |
|---------------------------------|-------------------------------|---------------------------------|------------------------------|
| 5. $7\frac{1}{2} + \frac{1}{4}$ | 6. $2 + 1\frac{5}{9}$         | 7. $1\frac{3}{4} + \frac{5}{8}$ | 8. $18 + 1\frac{7}{10}$      |
| $7\frac{1}{2} - \frac{1}{4}$    | $2 - 1\frac{5}{9}$            | $1\frac{3}{4} - \frac{5}{8}$    | $18 - 1\frac{7}{10}$         |
| $10 + 3\frac{1}{3}$             | $5\frac{2}{3} + \frac{1}{6}$  | $15\frac{3}{4} + \frac{1}{4}$   | $9\frac{1}{2} + \frac{1}{8}$ |
| $10 - 3\frac{1}{3}$             | $5\frac{2}{3} - \frac{1}{6}$  | $15\frac{3}{4} - \frac{1}{4}$   | $9\frac{1}{2} - \frac{1}{8}$ |
| $8\frac{4}{5} + \frac{1}{2}$    | $1\frac{5}{8} + \frac{2}{3}$  | $7\frac{4}{7} + \frac{1}{2}$    | $3\frac{1}{3} + \frac{1}{6}$ |
| $8\frac{4}{5} - \frac{1}{2}$    | $1\frac{5}{8} - \frac{2}{3}$  | $7\frac{4}{7} - \frac{1}{2}$    | $3\frac{1}{3} - \frac{1}{6}$ |
| $3\frac{3}{4} + \frac{1}{8}$    | $12\frac{1}{2} + \frac{2}{3}$ | $4\frac{3}{10} + \frac{1}{5}$   | $5\frac{5}{8} + \frac{1}{4}$ |
| $3\frac{3}{4} - \frac{1}{8}$    | $12\frac{1}{2} - \frac{2}{3}$ | $4\frac{3}{10} - \frac{1}{5}$   | $5\frac{5}{8} - \frac{1}{4}$ |
- 

Add, and subtract :

- |                                   |                                   |                                   |                                   |                                   |                                   |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| 9. $20\frac{3}{8}$                | 10. $50\frac{7}{8}$               | 11. $18\frac{1}{2}$               | 12. $37\frac{3}{4}$               | 13. $44\frac{5}{8}$               | 14. $13\frac{1}{2}$               |
| <u><math>7\frac{1}{2}</math></u>  | <u><math>12\frac{3}{4}</math></u> | <u><math>8\frac{1}{3}</math></u>  | <u><math>5\frac{1}{3}</math></u>  | <u><math>10\frac{1}{2}</math></u> | <u><math>4\frac{1}{5}</math></u>  |
| $75\frac{1}{4}$                   | $40\frac{2}{3}$                   | $65\frac{3}{8}$                   | $16\frac{5}{8}$                   | $48\frac{1}{2}$                   | $19\frac{9}{8}$                   |
| <u><math>5\frac{1}{2}</math></u>  | <u><math>20\frac{1}{3}</math></u> | <u><math>10\frac{1}{4}</math></u> | <u><math>2\frac{1}{3}</math></u>  | <u><math>7\frac{1}{4}</math></u>  | <u><math>9\frac{1}{2}</math></u>  |
| $37\frac{1}{2}$                   | $12\frac{1}{2}$                   | $66\frac{2}{3}$                   | $33\frac{1}{3}$                   | $87\frac{1}{2}$                   | $83\frac{1}{3}$                   |
| <u><math>12\frac{1}{2}</math></u> | <u><math>6\frac{1}{4}</math></u>  | <u><math>33\frac{1}{3}</math></u> | <u><math>16\frac{2}{3}</math></u> | <u><math>12\frac{1}{2}</math></u> | <u><math>16\frac{2}{3}</math></u> |

Give products:

1.  $2 \times \frac{4}{9}$

$9 \times \frac{2}{5}$

$3 \times \frac{5}{8}$

$4 \times \frac{2}{3}$

$7 \times \frac{1}{2}$

$5 \times \frac{5}{6}$

$8 \times \frac{2}{5}$

$6 \times \frac{3}{4}$

2.  $4 \times \frac{1}{3}$

$8 \times \frac{5}{6}$

$7 \times \frac{4}{9}$

$6 \times \frac{5}{8}$

$2 \times \frac{3}{5}$

$3 \times \frac{7}{10}$

$9 \times \frac{3}{4}$

$5 \times \frac{3}{7}$

3.  $2 \times \frac{5}{11}$

$4 \times \frac{7}{12}$

$6 \times \frac{4}{7}$

$9 \times \frac{3}{11}$

$7 \times \frac{2}{3}$

$3 \times \frac{3}{4}$

$8 \times \frac{5}{9}$

$5 \times \frac{5}{8}$

4.  $8 \times \frac{5}{7}$

$4 \times \frac{8}{9}$

$9 \times \frac{3}{8}$

$2 \times \frac{3}{7}$

$3 \times \frac{2}{9}$

$5 \times \frac{3}{4}$

$6 \times \frac{3}{5}$

$7 \times \frac{3}{10}$

5.  $10 \times \frac{4}{5}$

$12 \times \frac{2}{3}$

$8 \times \frac{3}{10}$

$7 \times \frac{2}{9}$

$10 \times \frac{3}{4}$

$9 \times \frac{2}{7}$

$12 \times \frac{2}{5}$

$11 \times \frac{4}{5}$

6.  $7 \times \frac{4}{5}$

$8 \times \frac{11}{2}$

$9 \times \frac{2}{3}$

$10 \times \frac{6}{7}$

$11 \times \frac{8}{9}$

$12 \times \frac{3}{4}$

$20 \times \frac{2}{5}$

$14 \times \frac{2}{3}$

7.  $2 \times \frac{5}{11}$

$8 \times \frac{5}{9}$

$5 \times \frac{3}{8}$

$3 \times \frac{3}{4}$

$6 \times \frac{4}{7}$

$9 \times \frac{3}{11}$

$7 \times \frac{2}{3}$

$4 \times \frac{7}{12}$

8.  $25 \times \frac{1}{4}$

$32 \times \frac{1}{6}$

$40 \times \frac{1}{7}$

$28 \times \frac{1}{3}$

$45 \times \frac{1}{8}$

$50 \times \frac{1}{11}$

$36 \times \frac{1}{5}$

$44 \times \frac{1}{9}$

Solve by cancellation:

9.  $28 \times \frac{3}{7}$

$18 \times \frac{4}{9}$

$44 \times \frac{5}{11}$

$75 \times \frac{2}{25}$

$20 \times \frac{9}{10}$

$21 \times \frac{6}{7}$

$30 \times \frac{4}{5}$

$66 \times \frac{8}{11}$

10.  $84 \times \frac{1}{12}$

$15 \times \frac{4}{5}$

$42 \times \frac{6}{7}$

$90 \times \frac{4}{5}$

$27 \times \frac{2}{3}$

$35 \times \frac{4}{7}$

$96 \times \frac{11}{12}$

$49 \times \frac{2}{7}$

11.  $50 \times \frac{7}{25}$

$24 \times \frac{7}{12}$

$45 \times \frac{8}{9}$

$36 \times \frac{7}{9}$

$80 \times \frac{7}{16}$

$48 \times \frac{5}{12}$

$32 \times \frac{3}{4}$

$81 \times \frac{5}{9}$

12.  $60 \times \frac{11}{12}$

$20 \times \frac{3}{4}$

$64 \times \frac{7}{8}$

$70 \times \frac{7}{10}$

$72 \times \frac{5}{12}$

$40 \times \frac{5}{8}$

$56 \times \frac{3}{7}$

$100 \times \frac{3}{25}$

Multiply:

1.	2.	3.	4.
$1\frac{1}{4}$ by 3	$4\frac{3}{10}$ by 2	$2\frac{2}{3}$ by 3	$6\frac{1}{2}$ by 8
$4\frac{1}{7}$ by 5	$7\frac{1}{6}$ by 5	$3\frac{1}{2}$ by 4	$12\frac{1}{4}$ by 4
$6\frac{1}{6}$ by 4	$2\frac{1}{8}$ by 7	$5\frac{1}{4}$ by 8	$9\frac{2}{5}$ by 10
$2\frac{2}{7}$ by 2	$5\frac{2}{11}$ by 4	$1\frac{3}{5}$ by 5	$3\frac{3}{4}$ by 8
$8\frac{2}{11}$ by 5	$9\frac{1}{8}$ by 8	$4\frac{1}{3}$ by 6	$5\frac{2}{3}$ by 6
$3\frac{2}{9}$ by 4	$4\frac{2}{7}$ by 3	$2\frac{3}{4}$ by 4	$1\frac{5}{6}$ by 12
$7\frac{1}{3}$ by 7	$3\frac{1}{5}$ by 4	$8\frac{1}{5}$ by 5	$4\frac{1}{3}$ by 9
$5\frac{1}{6}$ by 4	$10\frac{5}{12}$ by 2	$10\frac{2}{3}$ by 3	$11\frac{1}{2}$ by 6
<hr/>			
5.	6.	7.	8.
$4\frac{1}{3}$ by 5	$3\frac{1}{3}$ by 10	$2\frac{2}{3}$ by 4	$8\frac{1}{3}$ by 7
$3\frac{1}{5}$ by 6	$7\frac{1}{2}$ by 9	$3\frac{3}{4}$ by 5	$12\frac{1}{2}$ by 5
$2\frac{1}{4}$ by 7	$12\frac{1}{4}$ by 5	$4\frac{2}{6}$ by 7	$4\frac{2}{9}$ by 8
$5\frac{1}{2}$ by 9	$6\frac{1}{5}$ by 8	$3\frac{3}{8}$ by 5	$2\frac{3}{5}$ by 6
$10\frac{1}{7}$ by 8	$2\frac{1}{2}$ by 11	$5\frac{1}{4}$ by 3	$10\frac{1}{4}$ by 9
$6\frac{1}{6}$ by 10	$4\frac{1}{12}$ by 15	$6\frac{1}{4}$ by 9	$3\frac{1}{7}$ by 10
$8\frac{1}{10}$ by 11	$8\frac{1}{3}$ by 7	$4\frac{3}{5}$ by 9	$8\frac{1}{6}$ by 11
$9\frac{1}{8}$ by 12	$9\frac{1}{5}$ by 9	$3\frac{7}{8}$ by 7	$5\frac{4}{11}$ by 4
<hr/>			
9.	10.	11.	12.
$20\frac{7}{12}$ by 5	$9\frac{2}{11}$ by 20	$10\frac{1}{4}$ by 9	$1\frac{1}{5}$ by 12
$4\frac{3}{8}$ by 12	$4\frac{7}{12}$ by 11	$18\frac{2}{3}$ by 5	$5\frac{1}{3}$ by 16
$16\frac{5}{8}$ by 5	$8\frac{2}{5}$ by 40	$40\frac{3}{8}$ by 4	$2\frac{1}{5}$ by 18
$4\frac{3}{5}$ by 20	$6\frac{2}{3}$ by 15	$21\frac{3}{4}$ by 4	$6\frac{1}{15}$ by 20
$6\frac{3}{10}$ by 25	$2\frac{2}{5}$ by 30	$60\frac{1}{7}$ by 2	$5\frac{5}{12}$ by 15
$8\frac{3}{4}$ by 12	$3\frac{3}{8}$ by 25	$25\frac{1}{6}$ by 6	$4\frac{1}{7}$ by 21
$4\frac{2}{3}$ by 16	$5\frac{1}{6}$ by 20	$22\frac{1}{2}$ by 3	$13\frac{1}{3}$ by 3
$15\frac{5}{8}$ by 5	$7\frac{1}{7}$ by 14	$50\frac{7}{10}$ by 5	$37\frac{1}{2}$ by 2

Find products, cancelling when possible:

- |                                   |                                    |                                   |                                   |
|-----------------------------------|------------------------------------|-----------------------------------|-----------------------------------|
| 1. $\frac{1}{3}$ of $\frac{3}{5}$ | 2. $\frac{1}{2}$ of $\frac{3}{5}$  | 3. $\frac{4}{5}$ of $\frac{7}{8}$ | 4. $\frac{2}{3}$ of $\frac{6}{7}$ |
| $\frac{3}{4} \times \frac{8}{9}$  | $\frac{3}{8} \times \frac{5}{6}$   | $\frac{1}{3} \times \frac{6}{7}$  | $\frac{3}{4} \times \frac{1}{8}$  |
| $\frac{1}{2} \times \frac{8}{11}$ | $\frac{2}{7} \times \frac{3}{4}$   | $\frac{5}{7} \times \frac{1}{15}$ | $\frac{5}{9} \times \frac{9}{20}$ |
| $\frac{4}{7} \times \frac{3}{8}$  | $\frac{1}{2} \times \frac{1}{2}$   | $\frac{2}{3} \times \frac{7}{8}$  | $\frac{3}{8} \times \frac{8}{15}$ |
| $\frac{2}{3} \times \frac{9}{10}$ | $\frac{1}{8} \times \frac{4}{5}$   | $\frac{1}{4} \times \frac{4}{5}$  | $\frac{2}{7} \times \frac{5}{22}$ |
| $\frac{1}{4} \times \frac{2}{3}$  | $\frac{5}{9} \times \frac{3}{8}$   | $\frac{4}{9} \times \frac{1}{12}$ | $\frac{8}{10} \times \frac{5}{9}$ |
| $\frac{2}{5} \times \frac{3}{4}$  | $\frac{3}{7} \times \frac{1}{6}$   | $\frac{1}{2} \times \frac{8}{9}$  | $\frac{2}{11} \times \frac{5}{8}$ |
| $\frac{5}{8} \times \frac{3}{10}$ | $\frac{1}{5} \times \frac{10}{11}$ | $\frac{6}{11} \times \frac{2}{3}$ | $\frac{1}{3} \times \frac{1}{4}$  |
- 

- |                                     |                                     |                                      |                                      |
|-------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| 5. $\frac{5}{7}$ of $\frac{14}{35}$ | 6. $\frac{2}{11}$ of $\frac{7}{12}$ | 7. $\frac{2}{9}$ of $\frac{8}{11}$   | 8. $\frac{2}{3}$ of $\frac{2}{7}$    |
| $\frac{1}{5} \times \frac{1}{11}$   | $\frac{5}{17} \times \frac{3}{10}$  | $\frac{5}{9} \times \frac{6}{7}$     | $\frac{6}{11} \times \frac{5}{38}$   |
| $\frac{7}{8} \times \frac{12}{83}$  | $\frac{5}{6} \times \frac{12}{25}$  | $\frac{2}{7} \times \frac{21}{40}$   | $\frac{4}{5} \times \frac{6}{11}$    |
| $\frac{11}{14} \times \frac{7}{33}$ | $\frac{1}{2} \times \frac{1}{8}$    | $\frac{7}{24} \times \frac{8}{10}$   | $\frac{15}{32} \times \frac{16}{22}$ |
| $\frac{5}{6} \times \frac{3}{25}$   | $\frac{6}{7} \times \frac{7}{15}$   | $\frac{10}{11} \times \frac{3}{5}$   | $\frac{3}{4} \times \frac{12}{21}$   |
| $\frac{4}{9} \times \frac{7}{18}$   | $\frac{8}{11} \times \frac{3}{4}$   | $\frac{9}{10} \times \frac{5}{7}$    | $\frac{10}{11} \times \frac{7}{20}$  |
| $\frac{4}{7} \times \frac{8}{9}$    | $\frac{3}{20} \times \frac{4}{15}$  | $\frac{21}{22} \times \frac{11}{14}$ | $\frac{14}{15} \times \frac{3}{7}$   |
| $\frac{8}{10} \times \frac{5}{32}$  | $\frac{5}{12} \times \frac{6}{7}$   | $\frac{3}{40} \times \frac{10}{11}$  | $\frac{12}{45} \times \frac{9}{10}$  |
- 

### Comparison of Fractions

9. Which of the following fractions equal one-half?

$\frac{5}{8}, \frac{6}{12}, \frac{3}{5}, \frac{4}{9}, \frac{2}{4}, \frac{4}{7}, \frac{3}{8}, \frac{4}{10}, \frac{3}{6}, \frac{5}{10}, \frac{7}{15}, \frac{11}{20}.$

Which are greater than  $\frac{1}{2}$ ? Which are less? How can you tell at a glance?

10. Which of the following fractions equal one-third?

$\frac{4}{7}, \frac{3}{9}, \frac{5}{12}, \frac{3}{4}, \frac{3}{8}, \frac{6}{15}, \frac{4}{12}, \frac{5}{18}, \frac{2}{6}, \frac{6}{18}, \frac{2}{5}, \frac{7}{20}.$

Which are greater than  $\frac{1}{3}$ ? Which are less?

Find products, cancelling when possible:

1.

$1\frac{1}{2} \times \frac{2}{3}, \text{ or } \frac{3}{2} \times \frac{2}{3}$

$2\frac{1}{3} \times \frac{5}{7}, \text{ or } \frac{7}{3} \times \frac{5}{7}$

$4\frac{1}{2} \times \frac{1}{3}, \text{ or } \frac{9}{2} \times \frac{1}{3}$

$1\frac{3}{4} \times \frac{4}{5}, \text{ or } \frac{7}{4} \times \frac{4}{5}$

$3\frac{1}{5} \times \frac{5}{8}, \text{ or } \frac{16}{5} \times \frac{5}{8}$

$5\frac{1}{4} \times \frac{2}{7}, \text{ or } \frac{21}{4} \times \frac{2}{7}$

$2\frac{2}{3} \times \frac{7}{8}, \text{ or } \frac{8}{3} \times \frac{7}{8}$

$6\frac{1}{4} \times \frac{4}{5}, \text{ or } \frac{25}{4} \times \frac{4}{5}$

2.

$\frac{5}{6} \times 2\frac{2}{3}, \text{ or } \frac{5}{6} \times \frac{10}{3}$

$\frac{7}{11} \times 3\frac{1}{7}, \text{ or } \frac{7}{11} \times \frac{22}{7}$

$\frac{8}{9} \times 4\frac{3}{8}, \text{ or } \frac{8}{9} \times \frac{35}{8}$

$\frac{3}{5} \times 2\frac{5}{6}, \text{ or } \frac{3}{5} \times \frac{17}{6}$

$\frac{3}{7} \times 6\frac{1}{8}, \text{ or } \frac{3}{7} \times \frac{49}{8}$

$\frac{3}{4} \times 5\frac{1}{3}, \text{ or } \frac{3}{4} \times \frac{16}{3}$

$\frac{4}{5} \times 12\frac{1}{2}, \text{ or } \frac{4}{5} \times \frac{25}{2}$

$\frac{5}{9} \times 10\frac{1}{8}, \text{ or } \frac{5}{9} \times \frac{81}{8}$

3.

$1\frac{5}{8} \times 3\frac{3}{5}, \text{ or } \frac{13}{8} \times \frac{18}{5}$

$4\frac{2}{7} \times 1\frac{5}{9}, \text{ or } \frac{30}{7} \times \frac{14}{9}$

$8\frac{1}{4} \times 1\frac{1}{11}, \text{ or } \frac{33}{4} \times \frac{12}{11}$

$1\frac{1}{4} \times 5\frac{1}{3}, \text{ or } \frac{5}{4} \times \frac{16}{3}$

$3\frac{6}{7} \times 3\frac{1}{2}, \text{ or } \frac{27}{7} \times \frac{7}{2}$

$7\frac{1}{9} \times 4\frac{1}{2}, \text{ or } \frac{64}{9} \times \frac{9}{2}$

$3\frac{1}{3} \times 4\frac{9}{10}, \text{ or } \frac{10}{3} \times \frac{49}{10}$

$6\frac{1}{4} \times 1\frac{1}{5}, \text{ or } \frac{25}{4} \times \frac{6}{5}$

4.

$1\frac{3}{8} \times 10\frac{2}{3}, \text{ or } \frac{11}{8} \times \frac{32}{3}$

$5\frac{3}{5} \times 1\frac{1}{4}, \text{ or } \frac{28}{5} \times \frac{5}{4}$

$4\frac{9}{10} \times 1\frac{1}{7}, \text{ or } \frac{49}{10} \times \frac{8}{7}$

$2\frac{5}{8} \times 2\frac{1}{7}, \text{ or } \frac{21}{8} \times \frac{15}{7}$

$1\frac{3}{11} \times 3\frac{3}{10}, \text{ or } \frac{14}{11} \times \frac{33}{10}$

$9\frac{1}{3} \times 6\frac{3}{7}, \text{ or } \frac{28}{3} \times \frac{45}{7}$

$11\frac{1}{4} \times 1\frac{1}{15}, \text{ or } \frac{45}{4} \times \frac{16}{15}$

$6\frac{1}{9} \times 1\frac{3}{11}, \text{ or } \frac{55}{9} \times \frac{14}{11}$

Multiply:

5.  $45$

$\underline{2\frac{2}{3}}$

$50$

$\underline{8\frac{3}{5}}$

$25$

$\underline{8\frac{1}{3}}$

6.  $16$

$\underline{4\frac{3}{4}}$

$32$

$\underline{3\frac{3}{4}}$

$30$

$\underline{6\frac{1}{4}}$

7.  $24$

$\underline{2\frac{5}{12}}$

$75$

$\underline{4\frac{2}{3}}$

$18$

$\underline{2\frac{1}{5}}$

8.  $15$

$\underline{6\frac{2}{5}}$

$60$

$\underline{2\frac{5}{6}}$

$22$

$\underline{3\frac{1}{4}}$

9.  $21$

$\underline{4\frac{2}{3}}$

$35$

$\underline{2\frac{3}{7}}$

$14$

$\underline{5\frac{1}{3}}$

10.  $40$

$\underline{5\frac{3}{8}}$

$80$

$\underline{3\frac{3}{4}}$

$20$

$\underline{12\frac{1}{2}}$



Give products:

1.

$$2 \times \frac{5}{6}$$

$$3\frac{1}{2} \times 4$$

$$\frac{7}{8} \text{ of } 5$$

$$1\frac{3}{5} \times 6$$

2.

$$7 \times 2\frac{1}{4}$$

$$10 \times 3\frac{2}{3}$$

$$\frac{5}{6} \text{ of } \frac{2}{15}$$

$$4\frac{1}{2} \times 4\frac{1}{2}$$

3.

$$12\frac{1}{2} \times 2$$

$$4 \times 6\frac{1}{4}$$

$$8\frac{1}{3} \times 3$$

$$4 \times 2\frac{1}{2}$$

4.

$$\frac{9}{10} \text{ of } \frac{5}{6}$$

$$1\frac{1}{3} \times 1\frac{1}{3}$$

$$8 \times \frac{7}{8}$$

$$5 \times 3\frac{3}{4}$$

5.

$$\frac{9}{7} \text{ of } 12$$

$$11 \times 2\frac{1}{4}$$

$$5\frac{1}{2} \times \frac{3}{4}$$

$$2\frac{2}{3} \times 3$$

6.

$$40 \times \frac{1}{7}$$

$$\frac{8}{9} \text{ of } 10$$

$$\frac{1}{6} \text{ of } 45$$

$$3 \times 33\frac{1}{3}$$

7.

$$2\frac{2}{3} \times 2\frac{2}{3}$$

$$20 \times \frac{3}{8}$$

$$11\frac{1}{2} \times 2$$

$$\frac{1}{4} \times \frac{3}{5}$$

8.

$$14 \times \frac{5}{7}$$

$$9 \times 2\frac{1}{10}$$

$$\frac{3}{4} \text{ of } \frac{1}{3}$$

$$\frac{7}{10} \times \frac{1}{4}$$

9.

$$\frac{1}{2} \text{ of } \frac{1}{11}$$

$$3\frac{1}{5} \times \frac{1}{4}$$

$$\frac{2}{3} \text{ of } 20$$

$$1\frac{7}{8} \times \frac{7}{10}$$

10.

$$\frac{4}{5} \text{ of } 15$$

$$2\frac{1}{3} \times 12$$

$$\frac{3}{5} \text{ of } \frac{3}{5}$$

$$6\frac{1}{4} \times 2$$

11.

$$3 \times 12\frac{1}{2}$$

$$\frac{1}{3} \times \frac{1}{7}$$

$$16\frac{2}{3} \times 3$$

$$4 \times 2\frac{1}{2}$$

12.

$$16\frac{2}{3} \times 2$$

$$\frac{1}{20} \text{ of } 100$$

$$8\frac{1}{3} \times 6$$

$$50 \times \frac{2}{3}$$

13.

$$12\frac{1}{2} \times 5$$

$$1\frac{1}{8} \times 10$$

$$7 \times \frac{2}{15}$$

$$\frac{8}{9} \times 2\frac{4}{7}$$

14.

$$5 \times 9\frac{1}{4}$$

$$7 \times 12\frac{1}{2}$$

$$\frac{1}{15} \text{ of } 100$$

$$16\frac{2}{3} \times 6$$

15.

$$\frac{1}{8} \text{ of } 100$$

$$6\frac{1}{4} \times 8$$

$$2 \times 33\frac{1}{3}$$

$$9 \times \frac{3}{4}$$

16.

$$\frac{7}{8} \text{ of } 56$$

$$10 \times \frac{1}{11}$$

$$\frac{5}{8} \text{ of } 100$$

$$13 \times \frac{2}{3}$$

17.

$$3 \times 5\frac{1}{2}$$

$$\frac{7}{8} \text{ of } \frac{4}{9}$$

$$\frac{1}{3} \text{ of } 100$$

$$50 \times 2\frac{1}{2}$$

18.

$$\frac{1}{6} \text{ of } 100$$

$$3\frac{1}{3} \times 3$$

$$\frac{1}{8} \times \frac{8}{9}$$

$$\frac{5}{6} \text{ of } 2$$

19.

$$\frac{2}{9} \text{ of } 81$$

$$\frac{1}{12} \text{ of } 100$$

$$2\frac{1}{5} \times 5$$

$$6 \times 12\frac{1}{2}$$

20.

$$12\frac{1}{2} \times 8$$

$$8\frac{1}{3} \times 9$$

$$4 \times 12\frac{1}{2}$$

$$\frac{1}{6} \text{ of } 45$$

What is

1.

$\frac{1}{2}$  of 18?  
 $\frac{1}{3}$  of 27?  
 $\frac{1}{4}$  of 40?  
 $\frac{1}{5}$  of 35?  
 $\frac{1}{6}$  of 42?  
 $\frac{1}{7}$  of 49?  
 $\frac{1}{8}$  of 32?  
 $\frac{1}{9}$  of 45?

2.

$\frac{1}{10}$  of 30?  
 $\frac{1}{11}$  of 55?  
 $\frac{1}{12}$  of 48?  
 $\frac{1}{13}$  of 60?  
 $\frac{1}{20}$  of 80?  
 $\frac{1}{25}$  of 100?  
 $\frac{1}{40}$  of 80?  
 $\frac{1}{50}$  of 100?

3.

$\frac{2}{3}$  of 12?  
 $\frac{3}{4}$  of 16?  
 $\frac{2}{5}$  of 20?  
 $\frac{3}{5}$  of 15?  
 $\frac{4}{5}$  of 50?  
 $\frac{5}{6}$  of 12?  
 $\frac{2}{7}$  of 14?  
 $\frac{3}{7}$  of 21?

4.

$\frac{4}{7}$  of 7?  
 $\frac{5}{7}$  of 28?  
 $\frac{6}{7}$  of 70?  
 $\frac{3}{8}$  of 24?  
 $\frac{5}{8}$  of 40?  
 $\frac{7}{8}$  of 16?  
 $\frac{2}{9}$  of 18?  
 $\frac{5}{9}$  of 45?

5.

$\frac{3}{4}$  of 48?  
 $\frac{5}{8}$  of 64?  
 $\frac{7}{8}$  of 90?  
 $\frac{3}{11}$  of 44?  
 $\frac{7}{12}$  of 48?  
 $\frac{5}{9}$  of 27?  
 $\frac{4}{7}$  of 42?  
 $\frac{2}{3}$  of 33?

6.

$\frac{3}{5}$  of 55?  
 $\frac{3}{4}$  of 40?  
 $\frac{5}{8}$  of 96?  
 $\frac{3}{8}$  of 48?  
 $\frac{5}{6}$  of 72?  
 $\frac{7}{8}$  of 56?  
 $\frac{4}{5}$  of 35?  
 $\frac{2}{7}$  of 49?

7.

$\frac{3}{10}$  of 50?  
 $\frac{5}{12}$  of 84?  
 $\frac{3}{7}$  of 77?  
 $\frac{4}{5}$  of 45?  
 $\frac{7}{10}$  of 40?  
 $\frac{7}{12}$  of 36?  
 $\frac{4}{5}$  of 60?  
 $\frac{2}{11}$  of 55?

8.

$\frac{5}{7}$  of 56?  
 $\frac{9}{10}$  of 80?  
 $\frac{8}{11}$  of 22?  
 $\frac{5}{6}$  of 72?  
 $\frac{3}{4}$  of 32?  
 $\frac{6}{7}$  of 63?  
 $\frac{7}{8}$  of 40?  
 $\frac{5}{6}$  of 42?

9.

$\frac{4}{7}$  of 140?  
 $\frac{7}{8}$  of 108?  
 $\frac{3}{11}$  of 132?  
 $\frac{7}{12}$  of 144?  
 $\frac{5}{9}$  of 180?  
 $\frac{9}{10}$  of 200?  
 $\frac{7}{11}$  of 110?  
 $\frac{4}{5}$  of 75?

10.

$\frac{3}{8}$  of 96?  
 $\frac{2}{10}$  of 100?  
 $\frac{2}{5}$  of 100?  
 $\frac{1}{15}$  of 90?  
 $\frac{3}{25}$  of 150?  
 $\frac{5}{8}$  of 160?  
 $\frac{3}{10}$  of 130?  
 $\frac{2}{3}$  of 144?

11.

$\frac{1}{2}$  of 1240?  
 $\frac{1}{4}$  of 408?  
 $\frac{1}{5}$  of 2000?  
 $\frac{1}{3}$  of 612?  
 $\frac{7}{7}$  of 721?  
 $\frac{1}{8}$  of 2400?  
 $\frac{1}{6}$  of 486?  
 $\frac{1}{9}$  of 405?

12.

$\frac{1}{2}$  of 45?  
 $\frac{1}{3}$  of 70?  
 $\frac{1}{4}$  of 50?  
 $\frac{1}{5}$  of 62?  
 $\frac{1}{6}$  of 31?  
 $\frac{1}{7}$  of 80?  
 $\frac{1}{8}$  of 25?  
 $\frac{1}{9}$  of 40?

1.

- 2 is  $\frac{1}{2}$  of what number?  
 4 is  $\frac{1}{6}$  of what number?  
 6 is  $\frac{1}{4}$  of what number?  
 8 is  $\frac{1}{3}$  of what number?  
 5 is  $\frac{1}{5}$  of what number?  
 10 is  $\frac{1}{2}$  of what number?  
 9 is  $\frac{1}{3}$  of what number?  
 3 is  $\frac{1}{6}$  of what number?  
 12 is  $\frac{1}{4}$  of what number?  
 7 is  $\frac{1}{3}$  of what number?

2.

- 10 is  $\frac{1}{10}$  of what number?  
 6 is  $\frac{1}{3}$  of what number?  
 8 is  $\frac{1}{5}$  of what number?  
 9 is  $\frac{1}{2}$  of what number?  
 12 is  $\frac{1}{5}$  of what number?  
 7 is  $\frac{1}{7}$  of what number?  
 11 is  $\frac{1}{4}$  of what number?  
 9 is  $\frac{1}{10}$  of what number?  
 15 is  $\frac{1}{2}$  of what number?  
 25 is  $\frac{1}{3}$  of what number?

3.

- 12 is  $\frac{3}{4}$  of what number?  
 6 is  $\frac{2}{3}$  of what number?  
 8 is  $\frac{4}{5}$  of what number?  
 15 is  $\frac{3}{4}$  of what number?  
 10 is  $\frac{2}{5}$  of what number?  
 20 is  $\frac{5}{6}$  of what number?  
 18 is  $\frac{9}{7}$  of what number?  
 9 is  $\frac{3}{5}$  of what number?  
 14 is  $\frac{2}{3}$  of what number?  
 16 is  $\frac{4}{7}$  of what number?

4.

- 40 is  $\frac{4}{5}$  of what number?  
 36 is  $\frac{9}{10}$  of what number?  
 25 is  $\frac{5}{8}$  of what number?  
 42 is  $\frac{6}{7}$  of what number?  
 60 is  $\frac{5}{12}$  of what number?  
 35 is  $\frac{7}{8}$  of what number?  
 49 is  $\frac{7}{10}$  of what number?  
 30 is  $\frac{3}{4}$  of what number?  
 24 is  $\frac{2}{3}$  of what number?  
 21 is  $\frac{7}{8}$  of what number?

5.

- $\frac{1}{2}$  of 12 is  $\frac{3}{4}$  of how many?  
 $\frac{1}{5}$  of 40 is  $\frac{2}{3}$  of how many?  
 $\frac{1}{3}$  of 27 is  $\frac{3}{5}$  of how many?  
 $\frac{1}{6}$  of 48 is  $\frac{4}{7}$  of how many?  
 $\frac{1}{2}$  of 30 is  $\frac{5}{8}$  of how many?  
 $\frac{2}{3}$  of 60 is  $\frac{2}{5}$  of how many?

6.

- $\frac{3}{4}$  of 16 is  $\frac{9}{7}$  of how many?  
 $\frac{2}{5}$  of 20 is  $\frac{2}{3}$  of how many?  
 $\frac{3}{7}$  of 35 is  $\frac{5}{8}$  of how many?  
 $\frac{2}{3}$  of 36 is  $\frac{6}{7}$  of how many?  
 $\frac{1}{8}$  of 80 is  $\frac{2}{3}$  of how many?  
 $\frac{5}{9}$  of 27 is  $\frac{5}{6}$  of how many?

1.  $2 \div \frac{1}{2}$   
 $4 \div \frac{1}{3}$   
 $3 \div \frac{1}{4}$   
 $2 \div \frac{1}{3}$   
 $4 \div \frac{1}{4}$   
 $3 \div \frac{1}{2}$   
 $5 \div \frac{1}{3}$   
 $2 \div \frac{1}{5}$

2.  $2 \div \frac{1}{8}$   
 $5 \div \frac{1}{4}$   
 $2 \div \frac{1}{6}$   
 $4 \div \frac{1}{5}$   
 $3 \div \frac{1}{7}$   
 $5 \div \frac{1}{5}$   
 $3 \div \frac{1}{6}$   
 $6 \div \frac{1}{4}$

3.  $6 \div \frac{1}{2}$   
 $3 \div \frac{1}{3}$   
 $5 \div \frac{1}{2}$   
 $3 \div \frac{1}{5}$   
 $2 \div \frac{1}{4}$   
 $4 \div \frac{1}{2}$   
 $2 \div \frac{1}{7}$   
 $6 \div \frac{1}{3}$

4.  $4 \div \frac{1}{6}$   
 $5 \div \frac{1}{7}$   
 $4 \div \frac{1}{8}$   
 $6 \div \frac{1}{5}$   
 $4 \div \frac{1}{7}$   
 $3 \div \frac{1}{8}$   
 $5 \div \frac{1}{6}$   
 $5 \div \frac{1}{8}$

5.  $2 \div \frac{2}{3}$   
 $4 \div \frac{3}{4}$   
 $3 \div \frac{2}{5}$   
 $3 \div \frac{2}{3}$   
 $5 \div \frac{3}{5}$   
 $2 \div \frac{3}{4}$   
 $6 \div \frac{2}{3}$   
 $7 \div \frac{4}{5}$

6.  $6 \div \frac{3}{4}$   
 $2 \div \frac{5}{6}$   
 $7 \div \frac{2}{3}$   
 $3 \div \frac{3}{4}$   
 $6 \div \frac{3}{5}$   
 $5 \div \frac{5}{6}$   
 $8 \div \frac{2}{3}$   
 $9 \div \frac{3}{4}$

7.  $3 \div \frac{5}{6}$   
 $5 \div \frac{3}{4}$   
 $4 \div \frac{2}{3}$   
 $6 \div \frac{5}{6}$   
 $2 \div \frac{2}{5}$   
 $7 \div \frac{3}{4}$   
 $5 \div \frac{2}{3}$   
 $8 \div \frac{4}{5}$

8.  $9 \div \frac{2}{3}$   
 $4 \div \frac{3}{5}$   
 $7 \div \frac{5}{6}$   
 $8 \div \frac{3}{4}$   
 $3 \div \frac{4}{5}$   
 $4 \div \frac{5}{6}$   
 $9 \div \frac{2}{5}$   
 $8 \div \frac{5}{6}$

9.  $6 \div \frac{5}{7}$   
 $9 \div \frac{7}{8}$   
 $11 \div \frac{7}{8}$   
 $8 \div \frac{7}{10}$   
 $6 \div \frac{5}{8}$   
 $7 \div \frac{5}{7}$   
 $8 \div \frac{7}{8}$   
 $10 \div \frac{8}{9}$

10.  $6 \div \frac{6}{7}$   
 $7 \div \frac{5}{9}$   
 $6 \div \frac{7}{10}$   
 $7 \div \frac{5}{8}$   
 $7 \div \frac{6}{7}$   
 $6 \div \frac{7}{8}$   
 $9 \div \frac{9}{10}$   
 $7 \div \frac{7}{12}$

11.  $8 \div \frac{5}{7}$   
 $6 \div \frac{5}{9}$   
 $8 \div \frac{11}{12}$   
 $10 \div \frac{7}{8}$   
 $8 \div \frac{6}{7}$   
 $7 \div \frac{7}{10}$   
 $6 \div \frac{7}{12}$   
 $9 \div \frac{7}{8}$

12.  $8 \div \frac{8}{9}$   
 $10 \div \frac{6}{7}$   
 $9 \div \frac{11}{12}$   
 $7 \div \frac{7}{8}$   
 $9 \div \frac{6}{7}$   
 $8 \div \frac{7}{9}$   
 $6 \div \frac{11}{12}$   
 $11 \div \frac{8}{9}$

1.  $\frac{1}{2} \div 3$

$\frac{1}{3} \div 2$

$\frac{1}{4} \div 4$

$\frac{1}{2} \div 2$

$\frac{1}{5} \div 3$

$\frac{1}{3} \div 4$

$\frac{1}{4} \div 5$

$\frac{1}{5} \div 2$

2.  $\frac{1}{6} \div 6$

$\frac{1}{3} \div 3$

$\frac{1}{7} \div 5$

$\frac{1}{2} \div 6$

$\frac{1}{4} \div 3$

$\frac{1}{6} \div 5$

$\frac{1}{8} \div 2$

$\frac{1}{6} \div 3$

3.  $\frac{1}{8} \div 3$

$\frac{1}{2} \div 4$

$\frac{1}{7} \div 3$

$\frac{1}{5} \div 5$

$\frac{1}{3} \div 6$

$\frac{1}{7} \div 2$

$\frac{1}{5} \div 6$

$\frac{1}{2} \div 5$

4.  $\frac{1}{4} \div 2$

$\frac{1}{6} \div 4$

$\frac{1}{3} \div 5$

$\frac{1}{7} \div 6$

$\frac{1}{5} \div 4$

$\frac{1}{4} \div 6$

$\frac{1}{7} \div 4$

$\frac{1}{6} \div 2$

5.  $\frac{2}{3} \div 2$

$\frac{3}{4} \div 3$

$\frac{3}{5} \div 4$

$\frac{2}{3} \div 6$

$\frac{3}{8} \div 5$

$\frac{3}{10} \div 7$

$\frac{3}{4} \div 8$

$\frac{2}{5} \div 9$

6.  $\frac{7}{10} \div 5$

$\frac{8}{9} \div 9$

$\frac{3}{4} \div 2$

$\frac{4}{7} \div 3$

$\frac{2}{3} \div 4$

$\frac{4}{5} \div 8$

$\frac{5}{6} \div 7$

$\frac{3}{4} \div 6$

7.  $\frac{2}{3} \div 3$

$\frac{2}{5} \div 6$

$\frac{5}{6} \div 2$

$\frac{4}{9} \div 7$

$\frac{5}{7} \div 5$

$\frac{7}{8} \div 9$

$\frac{3}{4} \div 4$

$\frac{2}{3} \div 8$

8.  $\frac{2}{7} \div 6$

$\frac{3}{7} \div 8$

$\frac{7}{10} \div 9$

$\frac{5}{6} \div 4$

$\frac{5}{8} \div 5$

$\frac{4}{5} \div 2$

$\frac{3}{8} \div 3$

$\frac{6}{7} \div 7$

9.  $\frac{3}{10} \div 12$

$\frac{5}{8} \div 12$

$\frac{7}{10} \div 12$

$\frac{5}{12} \div 12$

$\frac{9}{11} \div 12$

$\frac{7}{9} \div 12$

$\frac{6}{7} \div 12$

$\frac{7}{11} \div 12$

10.  $\frac{2}{3} \div 15$

$\frac{3}{4} \div 15$

$\frac{1}{2} \div 15$

$\frac{4}{5} \div 15$

$\frac{5}{8} \div 15$

$\frac{7}{10} \div 15$

$\frac{5}{6} \div 15$

$\frac{3}{7} \div 15$

11.  $\frac{1}{2} \div 20$

$\frac{2}{3} \div 20$

$\frac{4}{5} \div 20$

$\frac{6}{7} \div 20$

$\frac{3}{8} \div 20$

$\frac{1}{6} \div 20$

$\frac{3}{4} \div 20$

$\frac{3}{10} \div 20$

12.  $\frac{9}{10} \div 25$

$\frac{2}{3} \div 25$

$\frac{7}{8} \div 25$

$\frac{1}{2} \div 25$

$\frac{3}{4} \div 25$

$\frac{3}{5} \div 25$

$\frac{5}{6} \div 25$

$\frac{2}{7} \div 25$

$$\begin{aligned}
 1. \quad & \frac{1}{2} \div \frac{1}{2} \\
 & \frac{1}{3} \div \frac{1}{5} \\
 & \frac{1}{4} \div \frac{1}{4} \\
 & \frac{1}{5} \div \frac{1}{3} \\
 & \frac{1}{8} \div \frac{1}{2}
 \end{aligned}$$

$$\begin{aligned}
 2. \quad & \frac{1}{10} \div \frac{1}{2} \\
 & \frac{1}{5} \div \frac{1}{8} \\
 & \frac{1}{3} \div \frac{1}{7} \\
 & \frac{1}{4} \div \frac{1}{5} \\
 & \frac{1}{11} \div \frac{1}{9}
 \end{aligned}$$

$$\begin{aligned}
 3. \quad & \frac{1}{2} \div \frac{1}{8} \\
 & \frac{1}{12} \div \frac{1}{4} \\
 & \frac{1}{10} \div \frac{1}{6} \\
 & \frac{1}{8} \div \frac{1}{9} \\
 & \frac{1}{2} \div \frac{1}{4}
 \end{aligned}$$

$$\begin{aligned}
 4. \quad & \frac{1}{7} \div \frac{1}{3} \\
 & \frac{1}{2} \div \frac{1}{10} \\
 & \frac{1}{9} \div \frac{1}{9} \\
 & \frac{1}{4} \div \frac{1}{10} \\
 & \frac{1}{3} \div \frac{1}{8}
 \end{aligned}$$

$$\begin{aligned}
 5. \quad & \frac{1}{6} \div \frac{1}{4} \\
 & \frac{1}{7} \div \frac{1}{2} \\
 & \frac{1}{8} \div \frac{1}{5} \\
 & \frac{1}{9} \div \frac{1}{3} \\
 & \frac{1}{4} \div \frac{1}{9}
 \end{aligned}$$

$$\begin{aligned}
 6. \quad & \frac{1}{6} \div \frac{1}{3} \\
 & \frac{1}{8} \div \frac{1}{7} \\
 & \frac{1}{12} \div \frac{1}{3} \\
 & \frac{1}{10} \div \frac{1}{5} \\
 & \frac{1}{4} \div \frac{1}{8}
 \end{aligned}$$

$$\begin{aligned}
 7. \quad & \frac{1}{4} \div \frac{1}{3} \\
 & \frac{1}{10} \div \frac{1}{7} \\
 & \frac{1}{2} \div \frac{1}{5} \\
 & \frac{1}{3} \div \frac{1}{3} \\
 & \frac{1}{7} \div \frac{1}{4}
 \end{aligned}$$

$$\begin{aligned}
 8. \quad & \frac{1}{11} \div \frac{1}{2} \\
 & \frac{1}{7} \div \frac{1}{9} \\
 & \frac{1}{5} \div \frac{1}{10} \\
 & \frac{1}{9} \div \frac{1}{6} \\
 & \frac{1}{6} \div \frac{1}{10}
 \end{aligned}$$

$$\begin{aligned}
 9. \quad & \frac{1}{2} \div \frac{1}{3} \\
 & \frac{1}{4} \div \frac{1}{6} \\
 & \frac{1}{9} \div \frac{1}{2} \\
 & \frac{1}{8} \div \frac{1}{9} \\
 & \frac{1}{5} \div \frac{1}{7}
 \end{aligned}$$

$$\begin{aligned}
 10. \quad & \frac{1}{3} \div \frac{1}{9} \\
 & \frac{1}{9} \div \frac{1}{4} \\
 & \frac{1}{12} \div \frac{1}{8} \\
 & \frac{1}{8} \div \frac{1}{6} \\
 & \frac{1}{3} \div \frac{1}{4}
 \end{aligned}$$

$$\begin{aligned}
 11. \quad & \frac{1}{7} \div \frac{1}{8} \\
 & \frac{1}{12} \div \frac{1}{5} \\
 & \frac{1}{11} \div \frac{1}{6} \\
 & \frac{1}{9} \div \frac{1}{8} \\
 & \frac{1}{4} \div \frac{1}{7}
 \end{aligned}$$

$$\begin{aligned}
 12. \quad & \frac{1}{2} \div \frac{1}{6} \\
 & \frac{1}{11} \div \frac{1}{7} \\
 & \frac{1}{6} \div \frac{1}{5} \\
 & \frac{1}{7} \div \frac{1}{10} \\
 & \frac{1}{5} \div \frac{1}{6}
 \end{aligned}$$

$$\begin{aligned}
 13. \quad & \frac{1}{12} \div \frac{1}{2} \\
 & \frac{1}{5} \div \frac{1}{5} \\
 & \frac{1}{2} \div \frac{1}{9} \\
 & \frac{1}{8} \div \frac{1}{4} \\
 & \frac{1}{11} \div \frac{1}{2}
 \end{aligned}$$

$$\begin{aligned}
 14. \quad & \frac{1}{7} \div \frac{1}{5} \\
 & \frac{1}{8} \div \frac{1}{8} \\
 & \frac{1}{10} \div \frac{1}{4} \\
 & \frac{1}{2} \div \frac{1}{7} \\
 & \frac{1}{9} \div \frac{1}{5}
 \end{aligned}$$

$$\begin{aligned}
 15. \quad & \frac{1}{3} \div \frac{1}{2} \\
 & \frac{1}{10} \div \frac{1}{3} \\
 & \frac{1}{12} \div \frac{1}{9} \\
 & \frac{1}{11} \div \frac{1}{4} \\
 & \frac{1}{7} \div \frac{1}{6}
 \end{aligned}$$

$$\begin{aligned}
 16. \quad & \frac{1}{5} \div \frac{1}{2} \\
 & \frac{1}{7} \div \frac{1}{7} \\
 & \frac{1}{8} \div \frac{1}{10} \\
 & \frac{1}{6} \div \frac{1}{7} \\
 & \frac{1}{9} \div \frac{1}{10}
 \end{aligned}$$

$$\begin{aligned}
 17. \quad & \frac{1}{6} \div \frac{1}{9} \\
 & \frac{1}{10} \div \frac{1}{8} \\
 & \frac{1}{5} \div \frac{1}{4} \\
 & \frac{1}{12} \div \frac{1}{7} \\
 & \frac{1}{6} \div \frac{1}{8}
 \end{aligned}$$

$$\begin{aligned}
 18. \quad & \frac{1}{10} \div \frac{1}{9} \\
 & \frac{1}{11} \div \frac{1}{5} \\
 & \frac{1}{3} \div \frac{1}{6} \\
 & \frac{1}{9} \div \frac{1}{7} \\
 & \frac{1}{6} \div \frac{1}{2}
 \end{aligned}$$

$$\begin{aligned}
 19. \quad & \frac{1}{4} \div \frac{1}{2} \\
 & \frac{1}{12} \div \frac{1}{6} \\
 & \frac{1}{8} \div \frac{1}{3} \\
 & \frac{1}{3} \div \frac{1}{10} \\
 & \frac{1}{4} \div \frac{1}{11}
 \end{aligned}$$

$$\begin{aligned}
 20. \quad & \frac{1}{2} \div \frac{1}{11} \\
 & \frac{1}{8} \div \frac{1}{6} \\
 & \frac{1}{11} \div \frac{1}{8} \\
 & \frac{1}{3} \div \frac{1}{11} \\
 & \frac{1}{4} \div \frac{1}{12}
 \end{aligned}$$

**Practice first for accuracy, then for speed.**

1. Start at 1. Count by threes. "1, 4, 7, 10, 13," etc.

Record the number reached at the end of one minute.

Start at 2. Count by threes. Record as before.

Start at 3. Count by threes.

2. In the same manner

Start at 1. Count by fours.

Count by fours, starting successively at 2, 3, and 4.

3. Start at 1. Count by fives.

Count by fives, starting successively at 2, 3, 4, and 5.

4. Count by sixes, starting successively at 1, 2, 3, 4, 5, and 6.

5. Count by sevens, starting successively at 1, 2, 3, 4, 5, 6, and 7.

6. Count by eights, starting successively at 1, 2, 3, 4, 5, 6, 7, and 8.

7. Count by nines, starting successively at 1, 2, 3, 4, 5, 6, 7, 8, and 9.

8. **Note.** To follow the work in U. S. money.

Starting at  $12\frac{1}{2}$ , count by  $12\frac{1}{2}$ 's as far as you can in 1 minute.

Starting at  $16\frac{2}{3}$ , count by  $16\frac{2}{3}$ 's as far as you can in 1 minute.

Starting at  $33\frac{1}{3}$ , count by  $33\frac{1}{3}$ 's as far as you can in 1 minute.

9. How many of the following fractions can you name in their lowest terms in one minute?

(a)  $\frac{3}{8}, \frac{4}{10}, \frac{2}{8}, \frac{3}{9}, \frac{6}{12}, \frac{2}{8}, \frac{5}{10}, \frac{6}{8}, \frac{4}{8}, \frac{3}{12}, \frac{2}{4}, \frac{2}{10}, \frac{4}{8}, \frac{6}{9}, \frac{9}{18}$

(b)  $\frac{4}{12}, \frac{8}{10}, \frac{8}{12}, \frac{6}{10}, \frac{3}{15}, \frac{9}{12}, \frac{14}{21}, \frac{4}{18}, \frac{9}{15}, \frac{8}{18}, \frac{5}{15}, \frac{15}{20}, \frac{5}{25}, \frac{5}{20}, \frac{3}{21}$

(c)  $\frac{10}{15}, \frac{12}{18}, \frac{2}{18}, \frac{10}{25}, \frac{12}{15}, \frac{10}{30}, \frac{6}{15}, \frac{10}{20}, \frac{15}{30}, \frac{20}{25}, \frac{3}{18}, \frac{20}{30}, \frac{25}{50}, \frac{10}{40}, \frac{6}{18}$

(d)  $\frac{20}{40}, \frac{15}{25}, \frac{18}{18}, \frac{7}{27}, \frac{7}{21}, \frac{9}{18}, \frac{6}{24}, \frac{12}{18}, \frac{11}{22}, \frac{5}{30}, \frac{2}{18}, \frac{10}{22}, \frac{12}{24}, \frac{10}{12}, \frac{14}{18}$

100 cents = \$1.

1. What part of one hundred cents, or one dollar, is

50¢?	10¢?	20¢?	80¢?	30¢?
25¢?	5¢?	40¢?	33 $\frac{1}{3}$ ¢?	70¢?
75¢?	4¢?	60¢?	66 $\frac{2}{3}$ ¢?	90¢?

2. What coin equals

25 cents?	2 quarters?	10 dimes?
10 cents?	5 nickels?	4 quarters?
5 cents?	5 dimes?	10 quarters?

3. How many nickels

In a dime?  
 In a quarter?  
 In a half-dollar?  
 In a dollar?

4. How many dimes

In a quarter?  
 In a 50-cent piece?  
 In a dollar?  
 In a \$2.50 gold piece?

5. How many quarters in a \$5 gold piece:

How many dimes in a \$5 gold piece?  
 How many nickels in a \$5 gold piece?  
 How many half-dollars in a \$5 gold piece?

6. What part of a dollar is

A cent? A nickel? A dime? A quarter? A 50-cent piece?

What coins will make

7. 50¢?	8. 40¢?	9. 20¢?	10. 70¢?	11. 45¢?
25¢?	75¢?	80¢?	85¢?	90¢?
30¢	55¢?	60¢?	35¢?	\$1?



Read:

1.	2.	3.	4.	5.
1.05	2.34	4.02	1.12	.90
.25	5.10	10.11	30.03	28.07
.01	.08	8.04	5.95	3.09
.75	202.45	103.03	20.40	25.19
6.84	8.00	20.27	226.63	.08
75.00	120.20	305.84	60.08	9.02

Add:

6.	7.	8.	9.	10.	11.
\$ .25	\$ .16	\$ .50	\$2.10	\$5.15	\$ .42
<u>1.40</u>	<u>.90</u>	<u>1.50</u>	<u>.64</u>	<u>.40</u>	<u>1.08</u>
\$1.10	\$ .40	\$ .33	\$1.32	\$ .75	\$2.40
<u>.65</u>	<u>.82</u>	<u>1.26</u>	<u>.27</u>	<u>1.75</u>	<u>.13</u>
\$2.01	\$ .39	\$2.84	\$4.0	\$2.20	\$ .64
<u>.67</u>	<u>1.30</u>	<u>.11</u>	<u>.76</u>	<u>.75</u>	<u>1.10</u>
\$1.55	\$8.25	\$1.11	\$1.64	\$2.05	\$3.30
<u>.42</u>	<u>.13</u>	<u>2.00</u>	<u>1.12</u>	<u>2.56</u>	<u>1.25</u>

12.	13.	14.	15.	16.	17.
\$ .23	\$ .72	\$ .33 $\frac{1}{3}$	\$ .54	\$ .08	\$ .46
.16	.20	.20	.12 $\frac{1}{2}$	.18	.24
<u>.05</u>	<u>.09</u>	<u>.10</u>	<u>.03</u>	<u>1.25</u>	<u>.02</u>
\$ .42	\$ .62 $\frac{1}{2}$	\$ .40	\$ .95	\$ .82	\$ .12 $\frac{1}{2}$
.37 $\frac{1}{2}$	.18	.32	1.06	1.00	.09
<u>.10</u>	<u>.50</u>	<u>.11</u>	<u>.03</u>	<u>.15</u>	<u>.87<math>\frac{1}{2}</math></u>
\$6.12 $\frac{1}{2}$	\$20.30	\$15.10	\$4.50	\$2.12 $\frac{1}{2}$	\$1.33 $\frac{1}{3}$
<u>4.10</u>	<u>8.75</u>	<u>3.33<math>\frac{1}{3}</math></u>	<u>2.87<math>\frac{1}{2}</math></u>	<u>1.62<math>\frac{1}{2}</math></u>	<u>1.16<math>\frac{2}{3}</math></u>

## Finding Amount of Purchases

Add:

1.	2.	3.	4.	5.	6.	7.	8.
\$ .05	\$ .06	\$ .25	\$ .12	\$ .15	\$ .08	\$ .12	\$ .15
<u>.01</u>	<u>.09</u>	<u>.08</u>	<u>.07</u>	<u>.07</u>	<u>.06</u>	<u>.05</u>	<u>.09</u>
\$ .09	\$ .14	\$ .11	\$ .17	\$ .20	\$ .16	\$ .09	\$ .22
<u>.05</u>	<u>.08</u>	<u>.12</u>	<u>.07</u>	<u>.06</u>	<u>.07</u>	<u>.08</u>	<u>.05</u>
\$ .25	\$ .18	\$ .13	\$ .21	\$ .27	\$ .19	\$ .33	\$ .38
<u>.12</u>	<u>.11</u>	<u>.10</u>	<u>.06</u>	<u>.05</u>	<u>.07</u>	<u>.08</u>	<u>.05</u>
\$1.12	\$1.15	\$1.10	\$1.14	\$1.31	\$1.17	\$1.15	\$1.25
<u>.13</u>	<u>.08</u>	<u>.18</u>	<u>.20</u>	<u>.12</u>	<u>.11</u>	<u>.25</u>	<u>.13</u>
<hr/>							
9.	10.	11.	12.	13.	14.	15.	16.
\$ .25	\$ .12	\$ .08	\$ .20	\$ .38	\$ .30	\$ .13	\$ .24
<u>.06</u>	<u>.07</u>	<u>.13</u>	<u>.10</u>	<u>.09</u>	<u>.18</u>	<u>.22</u>	<u>.04</u>
<u>.11</u>	<u>.08</u>	<u>.10</u>	<u>.06</u>	<u>.05</u>	<u>.04</u>	<u>.07</u>	<u>.11</u>
\$ .50	\$ .42	\$ .36	\$ .54	\$ .22	\$ .40	\$ .62	\$ .14
<u>.08</u>	<u>.12</u>	<u>.18</u>	<u>.09</u>	<u>.38</u>	<u>.17</u>	<u>.25</u>	<u>.30</u>
<u>.10</u>	<u>.03</u>	<u>.05</u>	<u>.05</u>	<u>.10</u>	<u>.09</u>	<u>.05</u>	<u>.03</u>
\$1.20	\$1.00	\$1.25	\$1.50	\$1.10	\$1.05	\$1.40	\$1.60
<u>.16</u>	<u>.30</u>	<u>.50</u>	<u>.12</u>	<u>.25</u>	<u>.15</u>	<u>.32</u>	<u>.25</u>
<u>.06</u>	<u>.07</u>	<u>.05</u>	<u>.10</u>	<u>.25</u>	<u>.20</u>	<u>.08</u>	<u>.15</u>

What will the following purchases cost?

17.  $2\frac{1}{2}$  doz. eggs @ 48¢.

5 lb. coffee @ 37¢.

12 lb. sugar @  $8\frac{1}{3}$ ¢.

4 jars fruit @ 62¢.

6 lemons @ 2 for 5¢.

3 doz. oranges @ 45¢.

18.  $5\frac{1}{2}$  yd. ribbon @ 40¢. $2\frac{1}{2}$  doz. buttons @ 80¢. $3\frac{1}{3}$  yd. lace @ 75¢.7 yd. scrim @  $12\frac{1}{2}$ ¢.2 yd. linen @  $62\frac{1}{2}$ ¢.

20 spools thread @ 60¢ a dozen.

## Making Change

Subtract :

1.	2.	3.	4.	5.	6.	7.	8.
\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25
<u>.07</u>	<u>.04</u>	<u>.10</u>	<u>.16</u>	<u>.08</u>	<u>.14</u>	<u>.06</u>	<u>.20</u>
\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25
<u>.09</u>	<u>.12</u>	<u>.15</u>	<u>.03</u>	<u>.13</u>	<u>.17</u>	<u>.19</u>	<u>.01</u>
\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25	\$\$.25
<u>.18</u>	<u>.23</u>	<u>.21</u>	<u>.02</u>	<u>.05</u>	<u>.11</u>	<u>.22</u>	<u>.24</u>

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9.	10.	11.	12.	13.	14.	15.	16.
\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50
<u>.38</u>	<u>.17</u>	<u>.26</u>	<u>.11</u>	<u>.28</u>	<u>.33</u>	<u>.14</u>	<u>.39</u>
\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50
<u>.22</u>	<u>.13</u>	<u>.23</u>	<u>.16</u>	<u>.18</u>	<u>.32</u>	<u>.19</u>	<u>.37</u>
\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50	\$\$.50
<u>.21</u>	<u>.35</u>	<u>.31</u>	<u>.24</u>	<u>.36</u>	<u>.29</u>	<u>.34</u>	<u>.27</u>
\$.75	\$.75	\$.75	\$.75	\$.75	\$.75	\$.75	\$.75
<u>.62</u>	<u>.54</u>	<u>.58</u>	<u>.51</u>	<u>.66</u>	<u>.62</u>	<u>.53</u>	<u>.59</u>

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17. \$1.00 - 63¢ = ?

\$1.00 - 47¢ = ?

\$1.00 - 37¢ = ?

\$1.00 - 85¢ = ?

\$1.00 - 19¢ = ?

\$1.00 - 54¢ = ?

\$1.00 - 49¢ = ?

\$1.00 - 72¢ = ?

18. \$2.00 - \$1.55 = ?

\$2.00 - .32 = ?

\$2.00 - .75 = ?

\$2.00 - 1.10 = ?

\$2.00 - .88 = ?

\$2.00 - 1.20 = ?

\$2.00 - 1.85 = ?

\$2.00 - .62 = ?

## Making Change

1.	2.	3.	4.
50¢ - 9¢	50¢ - 41¢	50¢ - 47¢	50¢ - 43¢.
50¢ - 15¢	50¢ - 20¢	50¢ - 8¢	50¢ - 5¢
50¢ - 12¢	50¢ - 40¢	50¢ - 45¢	50¢ - 44¢
50¢ - 6¢	50¢ - 25¢	50¢ - 30¢	50¢ - 7¢
50¢ - 10¢	50¢ - 46¢	50¢ - 42¢	50¢ - 3¢
\$1.00 - 10¢	\$1.00 - 25¢	\$1.00 - 20¢	\$1.00 - 80¢
\$1.00 - 40¢	\$1.00 - 50¢	\$1.00 - 9¢	\$1.00 - 6¢
\$1.00 - 7¢	\$1.00 - 70¢	\$1.00 - 60¢	\$1.00 - 30¢

Subtract :

5.	6.	7.	8.	9.	10.	11.	12.
\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
<u>.15</u>	<u>.55</u>	<u>.12</u>	<u>.48</u>	<u>.27</u>	<u>.87</u>	<u>.38</u>	<u>.42</u>
\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
<u>.68</u>	<u>.13</u>	<u>.72</u>	<u>.36</u>	<u>.28</u>	<u>.21</u>	<u>.43</u>	<u>.66</u>
\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
<u>.45</u>	<u>.23</u>	<u>.58</u>	<u>.61</u>	<u>.57</u>	<u>.18</u>	<u>.65</u>	<u>.44</u>
\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
<u>.78</u>	<u>.64</u>	<u>.33</u>	<u>.26</u>	<u>.39</u>	<u>.84</u>	<u>.62</u>	<u>.14</u>

13. \$5.00 - \$2.50	14. \$10.00 - \$3.75	15. \$20.00 - \$15.50
\$5.00 - \$1.75	\$10.00 - \$8.10	\$20.00 - \$12.00
\$5.00 - \$2.10	\$10.00 - \$6.50	\$20.00 - \$10.25
\$5.00 - \$3.25	\$10.00 - \$.67	\$20.00 - \$16.40
\$5.00 - \$4.15	\$10.00 - \$9.12	\$20.00 - \$8.75
\$5.00 - \$.85	\$10.00 - \$4.50	\$20.00 - \$9.50
\$5.00 - \$4.45	\$10.00 - \$2.25	\$20.00 - \$6.15
\$5.00 - \$2.20	\$10.00 - \$5.80	\$20.00 - \$19.10

See Subtraction of Decimals for further practice of this kind.

**Making Change**

Use **business method** in all cases.

What change should be given back to you at a store if you offer a quarter to pay for articles which amount to

- |              |                 |                  |
|--------------|-----------------|------------------|
| 1. 15 cents? | 6. 7¢ and 10¢?  | 11. 10¢ and 10¢? |
| 2. 17 cents? | 7. 15¢ and 3¢?  | 12. 5¢ and 7¢?   |
| 3. 8 cents?  | 8. 4¢ and 5¢?   | 13. 12¢ and 2¢?  |
| 4. 6 cents?  | 9. 13¢ and 10¢? | 14. 9¢ and 8¢?   |
| 5. 12 cents? | 10. 6¢ and 10¢? | 15. 7¢ and 8¢?   |

What coins might you receive back, in each case?

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What change should be given back to you if you offer a 50-cent piece in payment for articles which amount to

- |                           |                 |                  |
|---------------------------|-----------------|------------------|
| 1. $37\frac{1}{2}$ cents? | 6. 25¢ and 10¢? | 11. 17¢ and 10¢? |
| 2. 15 cents?              | 7. 20¢ and 15¢? | 12. 25¢ and 7¢?  |
| 3. 25 cents?              | 8. 16¢ and 30¢? | 13. 38¢ and 12¢? |
| 4. 40 cents?              | 9. 12¢ and 24¢? | 14. 18¢ and 5¢?  |
| 5. $12\frac{1}{2}$ cents? | 10. 9¢ and 40¢? | 15. 10¢ and 33¢? |

What coin or coins would make the exact change?

---

What change should you receive from a clerk to whom you hand a dollar, if your purchases amount to

- |                       |                               |                                |
|-----------------------|-------------------------------|--------------------------------|
| 1. 45¢?               | 6. 50¢ and $12\frac{1}{2}$ ¢? | 11. 42¢ and 18¢?               |
| 2. 75¢?               | 7. 45¢ and 40¢?               | 12. 33¢ and 7¢?                |
| 3. 62¢?               | 8. $37\frac{1}{2}$ ¢ and 50¢? | 13. $62\frac{1}{2}$ ¢ and 10¢? |
| 4. $87\frac{1}{2}$ ¢? | 9. 25¢ and 60¢?               | 14. 85¢ and 15¢?               |
| 5. 22¢?               | 10. 19¢ and 30¢?              | 15. 20¢ and 59¢?               |

1.  $\frac{1}{3}$  of \$1 is  $33\frac{1}{3}$  cents.  
 $\frac{2}{3}$  of \$1 is ? cents.

Count by  $33\frac{1}{3}$ 's to 100. To 200. To 300, and back to  $33\frac{1}{3}$ .

What is

- |                                      |                                      |
|--------------------------------------|--------------------------------------|
| 2. Twice $33\frac{1}{3}$ cents?      | 3. Four times $33\frac{1}{3}$ cents? |
| Three times $33\frac{1}{3}$ cents?   | Five times $33\frac{1}{3}$ cents?    |
| Six times $33\frac{1}{3}$ cents?     | Seven times $33\frac{1}{3}$ cents?   |
| Nine times $33\frac{1}{3}$ cents?    | Eight times $33\frac{1}{3}$ cents?   |
| Twelve times $33\frac{1}{3}$ cents?  | Ten times $33\frac{1}{3}$ cents?     |
| Fifteen times $33\frac{1}{3}$ cents? | Eleven times $33\frac{1}{3}$ cents?  |
- 

How many articles @  $33\frac{1}{3}\text{¢}$  each can be bought for

- |                         |                        |                         |
|-------------------------|------------------------|-------------------------|
| 4. 1 dollar?            | 5. \$ $7\frac{1}{3}$ ? | 6. \$10?                |
| $1\frac{1}{3}$ dollars? | \$15?                  | \$ $1.33\frac{1}{3}$ ?  |
| 2 dollars?              | \$ $8\frac{1}{3}$ ?    | \$ $5.66\frac{2}{3}$ ?  |
| $6\frac{2}{3}$ dollars? | \$ $3\frac{2}{3}$ ?    | \$18?                   |
| 10 dollars?             | \$ 8?                  | \$25?                   |
| $5\frac{1}{3}$ dollars? | \$ $10\frac{2}{3}$ ?   | \$ $20.33\frac{1}{3}$ ? |
| 12 dollars?             | \$ 7?                  | \$ $9.66\frac{2}{3}$ ?  |
| 9 dollars?              | \$20?                  | \$30?                   |
- 

7.  $66\frac{2}{3}\text{¢} \times 2 = ?$

$66\frac{2}{3}\text{¢} \times 3 = ?$

How many articles @  $66\frac{2}{3}\text{¢}$  each can be bought for \$2? For \$4?  
 For \$12? For \$6? For \$20? For \$8?

At  $66\frac{2}{3}\text{¢}$  each, what will be the cost of

- |                |                |                 |
|----------------|----------------|-----------------|
| 8. 2 articles? | 9. 5 articles? | 10. 8 articles? |
| 3 articles?    | 6 articles?    | 9 articles?     |
| 4 articles?    | 7 articles?    | 10 articles?    |

$\frac{1}{6}$  of \$1 is  $16\frac{2}{3}$  cents.

1.

$\frac{2}{8}$  (or  $\frac{1}{4}$ ) of 1 dollar is ? cents.

$\frac{3}{8}$  (or  $\frac{1}{2}$ ) of 1 dollar is ? cents.

$\frac{4}{8}$  (or  $\frac{2}{4}$ ) of 1 dollar is ? cents.

$\frac{5}{8}$  of 1 dollar is ? cents.

2.

50¢ is ? sixths of 1 dollar.

$16\frac{2}{3}$ ¢ is ? sixths of 1 dollar.

$66\frac{2}{3}$ ¢ is ? sixths of 1 dollar.

$33\frac{1}{3}$ ¢ is ? sixths of 1 dollar.

$83\frac{1}{3}$ ¢ is ? sixths of 1 dollar.

3. Count by  $16\frac{2}{3}$ 's from  $16\frac{2}{3}$  to 100 and back to  $16\frac{2}{3}$ .  
Count by  $16\frac{2}{3}$ 's to 200 and back to  $16\frac{2}{3}$ .

4. Complete the table below and memorize it.

$$16\frac{2}{3} \times 2 = \text{---}.$$

$$16\frac{2}{3} \times 3 = \text{---}.$$

$$16\frac{2}{3} \times 6 = \text{---}.$$

$$16\frac{2}{3} \times 4 = \text{---}.$$

$$16\frac{2}{3} \times 5 = \text{---}.$$

How much is

5. Twice  $16\frac{2}{3}$  cents?

Four times  $16\frac{2}{3}$  cents?

Six times  $16\frac{2}{3}$  cents?

Eight times  $16\frac{2}{3}$  cents?

Ten times  $16\frac{2}{3}$  cents?

6. Three times  $16\frac{2}{3}$  cents?

Five times  $16\frac{2}{3}$  cents?

Seven times  $16\frac{2}{3}$  cents?

Nine times  $16\frac{2}{3}$  cents?

Eighteen times  $16\frac{2}{3}$  cents?

At  $16\frac{2}{3}$ ¢ each, how many articles can be bought for

7.  $33\frac{1}{3}$  cents?

$66\frac{2}{3}$  cents?

50 cents?

$83\frac{1}{3}$  cents?

100 cents?

1 dollar?

$1\frac{1}{2}$  dollars?

2 dollars?

8. \$ $1\frac{1}{6}$ ?

\$ $2\frac{1}{3}$ ?

\$ $\frac{2}{3}$ ?

\$ $4\frac{1}{2}$ ?

\$ $1\frac{2}{3}$ ?

\$10?

\$ $3\frac{1}{2}$ ?

\$5?

9. \$1.50?

\$ $2.66\frac{2}{3}$ ?

\$3.00?

\$ $1.33\frac{1}{3}$ ?

\$4.50?

\$ $.83\frac{1}{3}$ ?

\$ $1.66\frac{2}{3}$ ?

\$ $1.83\frac{1}{3}$ ?

10. What is  $\frac{1}{2}$  of  $16\frac{2}{3}$ ¢? What part of a dollar is this?

$\frac{1}{8}$  of \$1 is  $12\frac{1}{2}$  cents.

1.

2.

$\frac{2}{8}$  (or  $\frac{1}{4}$ ) of \$1 is ? cents.

50¢ is ? eighths of 1 dollar.

$\frac{3}{8}$  of \$1 is ? cents.

87 $\frac{1}{2}$ ¢ is ? eighths of 1 dollar.

$\frac{4}{8}$  (or  $\frac{1}{2}$ ) of \$1 is ? cents.

25¢ is ? eighths of 1 dollar.

$\frac{5}{8}$  of \$1 is ? cents.

62 $\frac{1}{2}$ ¢ is ? eighths of 1 dollar.

$\frac{6}{8}$  (or  $\frac{3}{4}$ ) of \$1 is ? cents.

37 $\frac{1}{2}$ ¢ is ? eighths of 1 dollar.

$\frac{7}{8}$  of \$1 is ? cents.

75¢ is ? eighths of 1 dollar.

How much is

3. Twice  $12\frac{1}{2}$  cents?

4. Three times  $12\frac{1}{2}$  cents?

Four times  $12\frac{1}{2}$  cents?

Five times  $12\frac{1}{2}$  cents?

Six times  $12\frac{1}{2}$  cents?

Seven times  $12\frac{1}{2}$  cents?

Eight times  $12\frac{1}{2}$  cents?

Nine times  $12\frac{1}{2}$  cents?

Ten times  $12\frac{1}{2}$  cents?

Eleven times  $12\frac{1}{2}$  cents?

Twelve times  $12\frac{1}{2}$  cents?

Twenty times  $12\frac{1}{2}$  cents?

How many times is  $12\frac{1}{2}$ ¢ contained in

5. 25 cents?

6. \$5?

7. \$ 1.50?

1 dollar?

\$3 $\frac{1}{2}$ ?

\$ 2.12 $\frac{1}{2}$ ?

1 $\frac{1}{4}$  dollars?

\$4 $\frac{1}{4}$ ?

\$10.75?

50 cents?

\$1 $\frac{1}{4}$ ?

\$ 9.37 $\frac{1}{2}$ ?

37 $\frac{1}{2}$  cents?

\$10?

\$ 4.25?

1 $\frac{1}{2}$  dollars?

\$6 $\frac{1}{8}$ ?

\$ 7.87 $\frac{1}{2}$ ?

62 $\frac{1}{2}$  cents?

\$8?

\$ .37 $\frac{1}{2}$ ?

2 dollars?

\$2 $\frac{3}{8}$ ?

\$12.50?

75 cents?

\$9?

\$ .62 $\frac{1}{2}$ ?

87 $\frac{1}{2}$  cents?

\$4 $\frac{1}{8}$ ?

\$ .87 $\frac{1}{2}$ ?



1. Count by  $12\frac{1}{2}$ 's from  $12\frac{1}{2}$  to 100 and back to  $12\frac{1}{2}$ .

Count by  $12\frac{1}{2}$ 's to 200 and back to  $12\frac{1}{2}$ .

2. Complete the table below, and memorize it.

$$12\frac{1}{2} \times 2 = \text{---}.$$

$$12\frac{1}{2} \times 5 = \text{---}.$$

$$12\frac{1}{2} \times 3 = \text{---}.$$

$$12\frac{1}{2} \times 6 = \text{---}.$$

$$12\frac{1}{2} \times 4 = \text{---}.$$

$$12\frac{1}{2} \times 7 = \text{---}.$$

$$12\frac{1}{2} \times 8 = \text{---}.$$

How many articles at  $12\frac{1}{2}\text{¢}$  each can be bought for

- |                          |                           |                           |                            |
|--------------------------|---------------------------|---------------------------|----------------------------|
| 3. \$.87 $\frac{1}{2}$ ? | 4. \$1.12 $\frac{1}{2}$ ? | 5. \$1.62 $\frac{1}{2}$ ? | 6. \$ 4.12 $\frac{1}{2}$ ? |
| \$.50?                   | \$1.50?                   | \$2.00?                   | \$ 5.00?                   |
| \$.75?                   | \$1.37 $\frac{1}{2}$ ?    | \$2.50?                   | \$ 5.87 $\frac{1}{2}$ ?    |
| \$.37 $\frac{1}{2}$ ?    | \$1.75?                   | \$3.00?                   | \$ 6.00?                   |
| \$.25?                   | \$1.87 $\frac{1}{2}$ ?    | \$3.75?                   | \$ 6.25?                   |
| \$.62 $\frac{1}{2}$ ?    | \$1.25?                   | \$4.00?                   | \$10.00?                   |

7. What is  $\frac{1}{2}$  of  $12\frac{1}{2}\text{¢}$ ? What part of \$1 is this?

Find the cost of

8. 2 articles @  $37\frac{1}{2}\text{¢}$  each; @  $62\frac{1}{2}\text{¢}$  each; @  $87\frac{1}{2}\text{¢}$  each.
9. 3 articles @  $\$1.12\frac{1}{2}$  each; @  $37\text{¢}$  each; @  $62\frac{1}{2}\text{¢}$  each.
10. 4 articles @  $\$1.37\frac{1}{2}$  each; @  $62\frac{1}{2}\text{¢}$  each; @  $87\frac{1}{2}\text{¢}$  each.

1.  $\frac{1}{100}$  of \$1.00 = ?       $\frac{1}{20}$  of \$1.00 = ?       $\frac{1}{25}$  of \$1.00 = ?  
 $\frac{1}{8}$  of \$1.00 = ?       $\frac{1}{10}$  of \$1.00 = ?       $\frac{1}{12}$  of \$1.00 = ?

Express as a fractional part of one dollar:

- |                        |                   |                        |                   |
|------------------------|-------------------|------------------------|-------------------|
| 2. \$.33 $\frac{1}{3}$ | 3. \$.50          | 4. \$.62 $\frac{1}{2}$ | 5. \$.01          |
| .12 $\frac{1}{2}$      | .16 $\frac{2}{3}$ | .40                    | .87 $\frac{1}{2}$ |
| .10                    | .25               | .06 $\frac{1}{4}$      | .08 $\frac{1}{3}$ |
| .05                    | .37 $\frac{1}{2}$ | .30                    | .70               |
| .04                    | .75               | .66 $\frac{2}{3}$      | .83 $\frac{1}{3}$ |
- 

Express as cents:

- |                               |                               |                                |
|-------------------------------|-------------------------------|--------------------------------|
| 6. $\frac{1}{8}$ of a dollar. | 7. $\frac{5}{8}$ of a dollar. | 8. $\frac{1}{25}$ of a dollar. |
| $\frac{1}{2}$ of a dollar.    | $\frac{2}{3}$ of a dollar.    | $\frac{3}{5}$ of a dollar.     |
| $\frac{1}{8}$ of a dollar.    | $\frac{3}{8}$ of a dollar.    | $\frac{5}{8}$ of a dollar.     |
| $\frac{1}{3}$ of a dollar.    | $\frac{2}{3}$ of a dollar.    | $\frac{7}{8}$ of a dollar.     |
| $\frac{1}{4}$ of a dollar.    | $\frac{3}{4}$ of a dollar.    | $\frac{1}{12}$ of a dollar.    |
| $\frac{1}{10}$ of a dollar.   | $\frac{7}{10}$ of a dollar.   | $\frac{3}{10}$ of a dollar.    |
| $\frac{1}{5}$ of a dollar.    | $\frac{2}{5}$ of a dollar.    | $\frac{3}{5}$ of a dollar.     |
| $\frac{1}{16}$ of a dollar.   | $\frac{1}{20}$ of a dollar.   | $\frac{3}{20}$ of a dollar.    |
- 

Read the following amounts thus: "\$1.40 is \$1 $\frac{2}{5}$ ."

- |                    |                    |                     |                     |
|--------------------|--------------------|---------------------|---------------------|
| 9. \$1.40          | 10. \$10.20        | 11. \$12.75         | 12. \$ 2.05         |
| 3.87 $\frac{1}{2}$ | 1.33 $\frac{1}{3}$ | 9.40                | 10.04               |
| 2.10               | 15.60              | 8.16 $\frac{2}{3}$  | 6.12 $\frac{1}{2}$  |
| 5.50               | 2.05               | 2.08 $\frac{1}{3}$  | 5.83 $\frac{1}{3}$  |
| 1.12 $\frac{1}{2}$ | 3.37 $\frac{1}{2}$ | 25.12 $\frac{1}{2}$ | 7.62 $\frac{1}{2}$  |
| 6.66 $\frac{2}{3}$ | 6.25               | 4.06 $\frac{1}{4}$  | 15.37 $\frac{1}{2}$ |
| 8.06 $\frac{1}{4}$ | 20.75              | 16.15               | 1.30                |
| 9.80               | 4.62 $\frac{1}{2}$ | 5.08 $\frac{1}{3}$  | 8.70                |

- |                      |                    |                    |
|----------------------|--------------------|--------------------|
| 1. $2 \times 25 = ?$ | $5 \times 25 = ?$  | $8 \times 25 = ?$  |
| $3 \times 25 = ?$    | $6 \times 25 = ?$  | $9 \times 25 = ?$  |
| $4 \times 25 = ?$    | $7 \times 25 = ?$  | $10 \times 25 = ?$ |
| $11 \times 25 = ?$   | $12 \times 25 = ?$ |                    |

2. Count by 25's to 300. Count back to 25.

Practice doing this until you can do it in 20 seconds or less.

3. How many 25's in

75?	125?	50?	25?	100?	150?
200?	175?	300?	275?	250?	225?

4. How much money will buy one thrift stamp? Two thrift stamps? Five? Eight? Three? Twelve? Four? Seven? Eleven? Six? Ten?

5. How many quarters in

\$1.?	\$4.?	\$10.?	\$6.?	\$7.?	\$1.25?	\$1.75?
\$5.?	\$3.?	\$8.?	\$9.?	\$2.?	\$2.50?	\$1.50?

6. How much is

25¢, 25¢, and 50¢?	25¢, \$1.00, and 50¢?
50¢, 25¢, and 75¢?	50¢, 75¢, and \$1.00?
25¢, 75¢, and 25¢?	50¢, 50¢, and 75¢?
75¢, \$1.00, and 25¢?	75¢, 75¢, and 25¢?

7. What is the sum of

$25 + 25 + 50 + 25?$	$50 + 25 + 75 + 25?$
$75 + 25 + 25 + 25?$	$100 + 50 + 75 + 25?$
$50 + 25 + 50 + 25?$	$75 + 125 + 50 + 50?$
$25 + 75 + 50 + 50?$	$25 + 150 + 50 + 25?$

8. How many times 25% is

50%?	100%?	75%?	125%?	200%?	150%?	175%?
------	-------	------	-------	-------	-------	-------

9. What is  $\frac{1}{2}$  of 25 cents?

What is  $\frac{1}{4}$  of 25 cents?

What is  $\frac{1}{2}$  of 25%?

What is  $\frac{1}{4}$  of 25%?

1.	2.	3.	4.
$.2 + .7 = ?$	$.3 + .7 = ?$	$.8 + .6 = ?$	$.2 + .4 + .3 = ?$
$.4 + .4 = ?$	$.5 + .5 = ?$	$.3 + .8 = ?$	$.1 + .8 + .5 = ?$
$.7 + .2 = ?$	$.9 + .4 = ?$	$.9 + .6 = ?$	$.3 + .3 + .4 = ?$
$.5 + .3 = ?$	$.8 + .5 = ?$	$.7 + .5 = ?$	$.7 + .5 + .3 = ?$
$.1 + .5 = ?$	$.2 + .8 = ?$	$.8 + .7 = ?$	$.6 + .4 + .9 = ?$
$.2 + .6 = ?$	$.7 + .3 = ?$	$.6 + .6 = ?$	$.8 + .5 + .4 = ?$
$.3 + .3 = ?$	$.4 + .8 = ?$	$.7 + .7 = ?$	$.5 + .7 + .6 = ?$
$.4 + .5 = ?$	$.9 + .2 = ?$	$.8 + .8 = ?$	$.7 + .8 + .5 = ?$

Add:

$$\begin{array}{r} 5. \quad .2 \quad .6 \quad .5 \quad .1 \quad .4 \\ \quad .6 \quad .4 \quad .5 \quad .5 \quad .3 \\ \hline \quad .6 \quad .5 \quad .6 \quad .4 \quad .7 \end{array}$$

$$\begin{array}{r} 7. \quad .4 \quad .6 \quad .3 \quad .3 \quad .4 \\ \quad .3 \quad .4 \quad .7 \quad .3 \quad .8 \\ \hline \quad .5 \quad .5 \quad .8 \quad .3 \quad .2 \end{array}$$

$$\begin{array}{r} 9. \quad .4 \quad .1 \quad .8 \quad .7 \quad .6 \\ \quad .6 \quad .3 \quad .4 \quad .1 \quad .3 \\ \quad .2 \quad .4 \quad .3 \quad .9 \quad .4 \\ \hline \quad 5 \quad .6 \quad .3 \quad .1 \quad .4 \end{array}$$

$$\begin{array}{r} 6. \quad .3 \quad .6 \quad .3 \quad .5 \quad .2 \\ \quad .2 \quad .3 \quad .7 \quad .1 \quad .6 \\ \hline \quad .4 \quad .5 \quad .2 \quad .2 \quad .7 \end{array}$$

$$\begin{array}{r} 8. \quad .6 \quad .4 \quad .2 \quad .7 \quad .6 \\ \quad .1 \quad .5 \quad .5 \quad .3 \quad .2 \\ \hline \quad .3 \quad .3 \quad .5 \quad .1 \quad .8 \end{array}$$

$$\begin{array}{r} 10. \quad .8 \quad .2 \quad .2 \quad .4 \quad .4 \\ \quad .1 \quad .7 \quad .8 \quad .7 \quad .1 \\ \quad .5 \quad .4 \quad .5 \quad .2 \quad .1 \\ \hline \quad .3 \quad .1 \quad .5 \quad .6 \quad .8 \end{array}$$

$$\begin{array}{r} 11. \quad 3.6 \quad 5.8 \quad 7.5 \quad 2.5 \quad 4.3 \\ \quad .4 \quad .7 \quad .6 \quad .5 \quad .7 \\ \hline \quad .5 \quad .4 \quad .7 \quad .8 \quad .6 \end{array}$$

$$\begin{array}{r} 12. \quad 6.3 \quad 1.4 \quad 8.6 \quad 3.5 \quad 7.2 \\ \quad .6 \quad .4 \quad .2 \quad .3 \quad .9 \\ \hline \quad .8 \quad .2 \quad .2 \quad .6 \quad .4 \end{array}$$

$$\begin{array}{r} 13. \quad 4.1 \quad 7.6 \quad 3.8 \quad 5.5 \\ \quad .5 \quad .4 \quad .5 \quad .7 \\ \hline \quad .3 \quad .5 \quad .5 \quad .2 \end{array}$$

$$\begin{array}{r} 14. \quad 8.1 \quad 4.7 \quad 3.6 \quad 6.2 \\ \quad .8 \quad .7 \quad .9 \quad .3 \\ \hline \quad .6 \quad .5 \quad .1 \quad .7 \end{array}$$

$$\begin{array}{r} 15. \quad 1.5 \quad 6.8 \quad 4.7 \quad 3.8 \\ \hline \quad 5.7 \quad 3.3 \quad 6.9 \quad 5.7 \end{array}$$

$$\begin{array}{r} 16. \quad 6.2 \quad 5.5 \quad 9.5 \quad 7.1 \\ \hline \quad 7.9 \quad 7.7 \quad 3.7 \quad 8.3 \end{array}$$

1.	2.	3.	4.	5.
.4 + .3	.2 + .5	.9 + .2	.8 + .2	.4 + .7
.6 + .5	.3 + .4	.7 + .3	.3 + .3	.8 + .8
.5 + .4	.9 + .1	.6 + .4	.7 + .5	.6 + .2
.9 + .8	.7 + .8	.2 + .7	.2 + .2	.9 + .0
.6 + .7	.9 + .7	.1 + .0	.8 + .3	.8 + .4
.9 + .3	.7 + .2	.5 + .5	.5 + .7	.9 + .5
.3 + .5	.8 + .7	.4 + .4	.6 + .8	.4 + .5
.2 + .9	.3 + .9	.6 + .3	.7 + .7	.3 + .6
.3 + .8	.5 + .3	.8 + .9	.5 + .9	.7 + .9
.2 + .3	.7 + .4	.4 + .8	.2 + .4	.3 + .2
6.	7.	8.	9.	10.
.9 + .4	.5 + .6	.5 + .2	.2 + .6	1.4 + .5
.4 + .6	.4 + .9	.9 + .6	1.1 + .3	1.0 + .4
.3 + .7	1.0 + .2	1.0 + .3	1.5 + .6	1.3 + .7
.5 + .8	.8 + .6	.7 + .6	1.2 + .7	1.1 + .8
.6 + .6	1.0 + .7	.4 + .2	1.3 + .2	1.2 + .5
.6 + .9	1.2 + .6	1.1 + .7	1.9 + .1	.8 + .2
.8 + .5	1.6 + .2	1.2 + .2	1.8 + .5	1.6 + .9
.9 + .9	1.9 + .4	1.6 + .6	1.4 + .7	1.0 + .5
1.2 + .1	1.0 + .8	1.5 + .3	1.9 + .3	1.9 + .2
1.7 + .2	1.5 + .7	1.8 + .6	1.6 + .5	1.1 + .5
11.	12.	13.	14.	15.
1.1 + .9	1.8 + .4	1.3 + .5	1.8 + .8	1.3 + .4
1.6 + .3	1.3 + .3	1.9 + .8	1.4 + .6	1.6 + .7
1.8 + .2	1.3 + .8	1.7 + .8	1.1 + .4	1.0 + .6
1.7 + .6	1.5 + .9	1.2 + .3	1.0 + .9	1.7 + .9
1.2 + .0	1.4 + .2	1.9 + .5	1.7 + .3	1.4 + .3
1.2 + .9	1.7 + .5	1.9 + .9	1.1 + .2	1.6 + .8
1.5 + .8	1.8 + .9	1.6 + .4	1.2 + .8	1.3 + .6
1.8 + .7	1.5 + .5	1.1 + .6	1.7 + .7	1.7 + .4
1.5 + .2	1.2 + .4	1.8 + .3	1.9 + .6	1.9 + .7
1.3 + .9	1.4 + .9	1.4 + .4	1.5 + .4	1.4 + .8

Add:

1.	<u>.05</u> <u>.05</u>	<u>.06</u> <u>.03</u>	<u>.04</u> <u>.05</u>	<u>.07</u> <u>.03</u>	<u>.02</u> <u>.08</u>	<u>.05</u> <u>.03</u>	<u>.04</u> <u>.06</u>	<u>.04</u> <u>.04</u>
2.	<u>.06</u> <u>.07</u>	<u>.03</u> <u>.08</u>	<u>.05</u> <u>.09</u>	<u>.04</u> <u>.07</u>	<u>.08</u> <u>.08</u>	<u>.07</u> <u>.07</u>	<u>.09</u> <u>.04</u>	<u>.08</u> <u>.05</u>
3.	<u>.16</u> <u>.07</u>	<u>.21</u> <u>.04</u>	<u>.15</u> <u>.08</u>	<u>.19</u> <u>.04</u>	<u>.25</u> <u>.06</u>	<u>.32</u> <u>.08</u>	<u>.44</u> <u>.06</u>	<u>.32</u> <u>.08</u>
4.	<u>.38</u> <u>.06</u>	<u>.35</u> <u>.05</u>	<u>.61</u> <u>.08</u>	<u>.28</u> <u>.05</u>	<u>.33</u> <u>.08</u>	<u>.57</u> <u>.04</u>	<u>.68</u> <u>.05</u>	<u>.72</u> <u>.08</u>
5.	<u>1.05</u> <u>.13</u>	<u>2.17</u> <u>.06</u>	<u>4.25</u> <u>.12</u>	<u>3.34</u> <u>.08</u>	<u>6.08</u> <u>.15</u>	<u>7.18</u> <u>.07</u>	<u>5.04</u> <u>.18</u>	<u>2.27</u> <u>.11</u>
6.	<u>5.14</u> <u>.02</u>	<u>8.91</u> <u>.08</u>	<u>6.16</u> <u>.08</u>	<u>5.28</u> <u>.07</u>	<u>3.18</u> <u>.09</u>	<u>5.22</u> <u>.08</u>	<u>1.19</u> <u>.15</u>	<u>4.35</u> <u>.07</u>
7.	<u>1.02</u> <u>6.14</u>	<u>5.24</u> <u>1.33</u>	<u>3.05</u> <u>2.20</u>	<u>4.10</u> <u>6.35</u>	<u>8.11</u> <u>1.80</u>	<u>2.20</u> <u>3.17</u>	<u>5.05</u> <u>1.60</u>	<u>3.25</u> <u>2.20</u>
8.	<u>5.04</u> <u>1.67</u>	<u>3.19</u> <u>1.21</u>	<u>2.15</u> <u>6.15</u>	<u>6.18</u> <u>2.18</u>	<u>4.16</u> <u>4.16</u>	<u>1.25</u> <u>1.25</u>	<u>2.14</u> <u>7.08</u>	<u>1.13</u> <u>2.09</u>
9.	<u>.75</u> <u>.68</u>	<u>.24</u> <u>.89</u>	<u>.55</u> <u>.66</u>	<u>.37</u> <u>.25</u>	<u>.87</u> <u>.34</u>	<u>.15</u> <u>.98</u>	<u>.45</u> <u>.79</u>	<u>.58</u> <u>.37</u>
10.	<u>.02</u> <u>.16</u> <u>2.42</u>	<u>.25</u> <u>2.51</u> <u>.18</u>	<u>.13</u> <u>3.12</u> <u>.66</u>	<u>4.18</u> <u>.22</u> <u>.05</u>	<u>6.22</u> <u>.15</u> <u>.25</u>	<u>.37</u> <u>5.52</u> <u>.03</u>	<u>.19</u> <u>2.11</u> <u>.07</u>	<u>.54</u> <u>.05</u> <u>1.23</u>
11.	<u>.05</u> <u>1.20</u> <u>.10</u>	<u>.03</u> <u>.54</u> <u>1.02</u>	<u>.02</u> <u>.25</u> <u>2.62</u>	<u>3.11</u> <u>.05</u> <u>.22</u>	<u>.12</u> <u>4.23</u> <u>.04</u>	<u>.42</u> <u>1.12</u> <u>.03</u>	<u>2.05</u> <u>.11</u> <u>.52</u>	<u>5.22</u> <u>.33</u> <u>.01</u>

1. .9 - .4	2. .07 - .03	3. 1.7 - .5	4. 5.9 - .6
.8 - .3	.09 - .06	1.8 - .7	3.7 - .3
.7 - .2	.08 - .05	2.4 - .3	2.6 - .5
.6 - .1	.05 - .01	3.6 - .6	4.8 - .3
.9 - .6	.06 - .03	4.8 - .5	3.9 - .5
.8 - .4	.09 - .07	1.9 - .8	2.5 - .4
.7 - .3	.08 - .03	2.7 - .4	3.7 - .2
.5 - .2	.07 - .02	5.8 - .6	5.6 - .4
.9 - .5	.09 - .04	1.5 - .5	4.4 - .4
.8 - .2	.08 - .07	3.9 - .4	2.8 - .7

Subtract:

5. 1.7	1.8	2.4	3.6	4.8	1.9	2.7	5.8
<u>.5</u>	<u>.1</u>	<u>.3</u>	<u>.6</u>	<u>.5</u>	<u>.4</u>	<u>.3</u>	<u>.6</u>
6. 1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<u>.7</u>	<u>.5</u>	<u>.2</u>	<u>.3</u>	<u>.8</u>	<u>.9</u>	<u>.6</u>	<u>.4</u>
7. 2.0	5.0	3.0	6.0	9.0	4.0	7.0	8.0
<u>.3</u>	<u>.7</u>	<u>.8</u>	<u>.2</u>	<u>.4</u>	<u>.9</u>	<u>.5</u>	<u>.6</u>
8. 1.5	2.4	3.7	5.4	7.3	2.2	3.3	6.3
<u>.8</u>	<u>.6</u>	<u>.8</u>	<u>.6</u>	<u>.8</u>	<u>.5</u>	<u>.9</u>	<u>.7</u>
9. .9	.8	.6	.5	.7	.4	.3	.8
<u>.05</u>	<u>.02</u>	<u>.08</u>	<u>.04</u>	<u>.06</u>	<u>.07</u>	<u>.01</u>	<u>.09</u>
10. .7	.9	.4	.6	.4	.8	.5	.7
<u>.12</u>	<u>.54</u>	<u>.22</u>	<u>.35</u>	<u>.11</u>	<u>.33</u>	<u>.27</u>	<u>.46</u>
11. 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<u>.22</u>	<u>.36</u>	<u>.53</u>	<u>.61</u>	<u>.47</u>	<u>.28</u>	<u>.89</u>	<u>.74</u>
12. .45	.64	.33	.41	.55	.84	.77	.62
<u>.27</u>	<u>.18</u>	<u>.15</u>	<u>.12</u>	<u>.36</u>	<u>.29</u>	<u>.18</u>	<u>.27</u>
13. 1.09	3.25	2.16	1.17	5.22	3.06	4.32	9.11
<u>.35</u>	<u>.16</u>	<u>.52</u>	<u>.48</u>	<u>.15</u>	<u>.25</u>	<u>.25</u>	<u>.04</u>

Subtract :

$$\begin{array}{r} 1. \quad .4 \quad .8 \quad .9 \quad 1.2 \quad 1.3 \\ \quad .2 \quad .4 \quad .9 \quad .8 \quad .4 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 1.5 \quad 1.8 \quad 1.4 \quad 2.0 \quad .8 \\ \quad 1.3 \quad 1.0 \quad .5 \quad .6 \quad .7 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 1.0 \quad 1.1 \quad 1.8 \quad 1.9 \quad .5 \\ \quad .2 \quad .7 \quad 1.3 \quad 1.6 \quad .5 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 2.0 \quad 1.9 \quad .5 \quad 1.2 \quad 1.5 \\ \quad 1.5 \quad 1.2 \quad .2 \quad .4 \quad .7 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 1.7 \quad 1.8 \quad 1.3 \quad .9 \quad 1.7 \\ \quad 1.2 \quad 1.5 \quad .6 \quad .5 \quad .8 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad .6 \quad 1.0 \quad 1.6 \quad 1.9 \quad .3 \\ \quad .3 \quad .6 \quad 1.5 \quad .7 \quad .3 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad .3 \quad 1.1 \quad 1.9 \quad 1.4 \quad 2.0 \\ \quad .2 \quad .6 \quad .5 \quad 1.1 \quad .0 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 1.4 \quad .7 \quad 1.9 \quad 1.3 \quad 1.5 \\ \quad .6 \quad .2 \quad .3 \quad 1.1 \quad 1.4 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 1.3 \quad 1.6 \quad 1.8 \quad 2.0 \quad 1.0 \\ \quad 1.2 \quad 1.1 \quad 1.4 \quad 1.6 \quad .7 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad .9 \quad 1.5 \quad 1.9 \quad 2.0 \quad 1.1 \\ \quad .2 \quad .6 \quad 1.1 \quad 1.4 \quad .3 \\ \hline \end{array}$$

$$\begin{array}{r} 21. \quad .9 \quad 1.2 \quad 2.0 \quad 1.6 \quad .2 \\ \quad .4 \quad .5 \quad .5 \quad 1.2 \quad .2 \\ \hline \end{array}$$

$$\begin{array}{r} 23. \quad .7 \quad 2.0 \quad 1.9 \quad 1.1 \quad .9 \\ \quad .5 \quad .3 \quad .4 \quad .2 \quad .7 \\ \hline \end{array}$$

$$\begin{array}{r} 25. \quad 1.8 \quad .8 \quad .8 \quad .7 \quad 1.4 \\ \quad 1.2 \quad .6 \quad .5 \quad .3 \quad 1.3 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 1.9 \quad 1.3 \quad .9 \quad .7 \quad 1.8 \\ \quad .2 \quad 1.0 \quad .6 \quad .4 \quad .9 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 1.5 \quad 1.9 \quad 1.4 \quad 1.3 \quad .8 \\ \quad .8 \quad .9 \quad 1.0 \quad .5 \quad .3 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 1.6 \quad 1.1 \quad 1.7 \quad 1.1 \quad 1.6 \\ \quad .9 \quad 1.0 \quad .9 \quad .8 \quad 1.3 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 2.0 \quad 1.0 \quad 1.7 \quad 2.0 \quad .5 \\ \quad .7 \quad .9 \quad 1.1 \quad .2 \quad .3 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 1.2 \quad 1.7 \quad 1.6 \quad 2.0 \quad 1.2 \\ \quad .6 \quad 1.4 \quad 1.0 \quad .4 \quad .9 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad .5 \quad 1.1 \quad 1.7 \quad 1.3 \quad .9 \\ \quad .4 \quad .5 \quad 1.0 \quad .7 \quad .3 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 1.3 \quad 1.9 \quad 1.6 \quad .6 \quad 2.0 \\ \quad .8 \quad 1.4 \quad .8 \quad .2 \quad 1.3 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 1.7 \quad .8 \quad 1.0 \quad .8 \quad .7 \\ \quad 1.3 \quad .8 \quad .5 \quad .2 \quad .6 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 1.2 \quad .6 \quad 1.5 \quad .9 \quad 1.6 \\ \quad 1.1 \quad .5 \quad .9 \quad .8 \quad .7 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad .7 \quad 1.4 \quad 1.8 \quad 1.9 \quad 1.2 \\ \quad .7 \quad .8 \quad 1.1 \quad 1.3 \quad .7 \\ \hline \end{array}$$

$$\begin{array}{r} 22. \quad 1.2 \quad 1.4 \quad 1.3 \quad 2.0 \quad 1.5 \\ \quad .3 \quad .7 \quad .9 \quad 1.2 \quad 1.2 \\ \hline \end{array}$$

$$\begin{array}{r} 24. \quad .6 \quad 1.1 \quad 2.0 \quad 1.8 \quad 2.0 \\ \quad .4 \quad .9 \quad .8 \quad 1.6 \quad 1.9 \\ \hline \end{array}$$

$$\begin{array}{r} 26. \quad 10. \quad 1.0 \quad 1.7 \quad 2.0 \quad 1.5 \\ \quad .8 \quad .4 \quad 1.6 \quad .9 \quad 1.0 \\ \hline \end{array}$$



# 102 DECIMAL FRACTIONS SUBTRACTION

- |                 |                 |                 |                 |
|-----------------|-----------------|-----------------|-----------------|
| 1. $.14 - .09$  | 2. $.75 - .07$  | 3. $.61 - .02$  | 4. $.16 - .06$  |
| $.24 - .07$     | $.59 - .06$     | $.20 - .09$     | $.50 - .08$     |
| $.90 - .03$     | $.22 - .05$     | $.99 - .04$     | $.83 - .06$     |
| $.65 - .06$     | $.67 - .03$     | $.86 - .05$     | $.44 - .04$     |
| $.82 - .04$     | $.52 - .08$     | $.39 - .09$     | $.60 - .05$     |
| 5. $.29 - .07$  | 6. $.24 - .09$  | 7. $.58 - .09$  | 8. $.34 - .03$  |
| $.73 - .03$     | $.71 - .04$     | $.40 - .07$     | $.42 - .07$     |
| $.35 - .06$     | $.96 - .08$     | $.26 - .03$     | $.68 - .02$     |
| $.89 - .05$     | $.64 - .02$     | $.33 - .02$     | $.23 - .08$     |
| $.55 - .08$     | $.19 - .05$     | $.12 - .04$     | $.92 - .07$     |
| 9. $.80 - .06$  | 10. $.97 - .06$ | 11. $.30 - .02$ | 12. $.27 - .03$ |
| $.37 - .05$     | $.45 - .05$     | $.17 - .08$     | $.98 - .06$     |
| $.69 - .02$     | $.31 - .09$     | $.65 - .04$     | $.36 - .07$     |
| $.56 - .04$     | $.72 - .05$     | $.57 - .07$     | $.41 - .05$     |
| $.18 - .07$     | $.66 - .08$     | $.95 - .09$     | $.63 - .04$     |
| 13. $.72 - .02$ | 14. $.15 - .02$ | 15. $.81 - .03$ | 16. $.11 - .07$ |
| $.13 - .07$     | $.32 - .05$     | $.48 - .08$     | $.38 - .05$     |
| $.87 - .09$     | $.94 - .08$     | $.70 - .07$     | $.74 - .02$     |
| $.76 - .04$     | $.78 - .03$     | $.93 - .09$     | $.21 - .06$     |
| $.88 - .07$     | $.25 - .06$     | $.54 - .03$     | $.43 - .07$     |
| 17. $.84 - .05$ | 18. $.49 - .08$ | 19. $.47 - .04$ | 20. $.20 - .03$ |
| $.46 - .07$     | $.53 - .04$     | $.33 - .05$     | $.83 - .04$     |
| $.91 - .08$     | $.77 - .02$     | $.64 - .03$     | $.74 - .06$     |
| $.79 - .03$     | $.51 - .05$     | $.95 - .06$     | $.36 - .02$     |
| $.28 - .04$     | $.85 - .03$     | $.56 - .09$     | $.71 - .05$     |
| 21. $.92 - .09$ | 22. $.17 - .08$ | 23. $.78 - .05$ | 24. $.54 - .06$ |
| $.63 - .02$     | $.96 - .04$     | $.44 - .09$     | $.93 - .09$     |
| $.40 - .04$     | $.52 - .03$     | $.55 - .03$     | $.18 - .05$     |
| $.35 - .05$     | $.80 - .06$     | $.39 - .04$     | $.31 - .07$     |
| $.68 - .07$     | $.15 - .07$     | $.41 - .05$     | $.62 - .08$     |

1.	2.	3.	4.	5.
$2 \times .2$	$3 \times .3$	$4 \times .8$	$5 \times .2$	$6 \times .7$
$2 \times .5$	$3 \times .8$	$4 \times .4$	$5 \times .9$	$6 \times .3$
$2 \times .4$	$3 \times .4$	$4 \times .2$	$5 \times .6$	$6 \times .8$
$2 \times .9$	$3 \times .9$	$4 \times .6$	$5 \times .8$	$6 \times .9$
$2 \times .3$	$3 \times .5$	$4 \times .7$	$5 \times .5$	$6 \times .2$
$2 \times .6$	$3 \times .2$	$4 \times .5$	$5 \times .3$	$6 \times .5$
$2 \times .8$	$3 \times .6$	$4 \times .9$	$5 \times .7$	$6 \times .6$
$2 \times .7$	$3 \times .7$	$4 \times .3$	$5 \times .4$	$6 \times .4$
6.	7.	8.	9.	10.
$7 \times .08$	$8 \times .03$	$9 \times .05$	$10 \times .06$	$12 \times .09$
$7 \times .02$	$8 \times .05$	$9 \times .02$	$10 \times .02$	$12 \times .02$
$7 \times .03$	$8 \times .09$	$9 \times .08$	$10 \times .03$	$12 \times .08$
$7 \times .06$	$8 \times .02$	$9 \times .06$	$10 \times .05$	$12 \times .06$
$7 \times .09$	$8 \times .06$	$9 \times .03$	$11 \times .09$	$12 \times .03$
$7 \times .04$	$8 \times .04$	$9 \times .07$	$11 \times .07$	$12 \times .07$
$7 \times .07$	$8 \times .07$	$9 \times .04$	$11 \times .04$	$12 \times .04$
$7 \times .05$	$8 \times .08$	$9 \times .09$	$11 \times .08$	$12 \times .05$

Multiply:

11.	.9	.2	.4	.6	.7	.3	.4	.9	.2	.8
	<u>.2</u>	<u>.6</u>	<u>.9</u>	<u>.5</u>	<u>.3</u>	<u>.6</u>	<u>.7</u>	<u>.6</u>	<u>.3</u>	<u>.2</u>
12.	.5	.7	.4	.6	.7	.6	.4	.3	.5	.7
	<u>.5</u>	<u>.9</u>	<u>.4</u>	<u>.8</u>	<u>.5</u>	<u>.6</u>	<u>.5</u>	<u>.7</u>	<u>.8</u>	<u>.7</u>
13.	.05	.12	.04	.06	.11	.15	.03	.09	.01	.14
	<u>.5</u>	<u>.5</u>	<u>.4</u>	<u>.3</u>	<u>.7</u>	<u>.6</u>	<u>.9</u>	<u>.8</u>	<u>.9</u>	<u>.2</u>
14.	1.2	1.1	8.4	7.5	2.1	1.5	7.0	4.2	1.3	1.8
	<u>.7</u>	<u>.9</u>	<u>.2</u>	<u>.4</u>	<u>.8</u>	<u>.6</u>	<u>.5</u>	<u>.3</u>	<u>.7</u>	<u>.2</u>
15.	.06	.12	.15	.22	.07	.25	.11	.33	.16	.01
	<u>.04</u>	<u>.08</u>	<u>.05</u>	<u>.02</u>	<u>.09</u>	<u>.03</u>	<u>.12</u>	<u>.03</u>	<u>.05</u>	<u>.01</u>

- |                    |                    |                    |                    |
|--------------------|--------------------|--------------------|--------------------|
| 1. $6 \times .7$   | 2. $2 \times .3$   | 3. $2 \times .2$   | 4. $9 \times .3$   |
| $3 \times .5$      | $3 \times .9$      | $4 \times .9$      | $6 \times .4$      |
| $11 \times .7$     | $11 \times .3$     | $7 \times .7$      | $7 \times .8$      |
| $5 \times .9$      | $4 \times .2$      | $8 \times .5$      | $9 \times .7$      |
| $2 \times .4$      | $5 \times .7$      | $7 \times .3$      | $10 \times .8$     |
| 5. $3 \times .2$   | 6. $11 \times .8$  | 7. $8 \times .6$   | 8. $8 \times .4$   |
| $8 \times .8$      | $6 \times .6$      | $7 \times .9$      | $12 \times .3$     |
| $4 \times .6$      | $5 \times .4$      | $12 \times .5$     | $10 \times .2$     |
| $6 \times .7$      | $12 \times .2$     | $8 \times .7$      | $12 \times .4$     |
| $10 \times .5$     | $2 \times .9$      | $11 \times .9$     | $9 \times .5$      |
| 9. $9 \times .4$   | 10. $5 \times .6$  | 11. $2 \times .6$  | 12. $9 \times .6$  |
| $11 \times .5$     | $3 \times .7$      | $4 \times .8$      | $3 \times .8$      |
| $10 \times .3$     | $6 \times .3$      | $10 \times .7$     | $4 \times .5$      |
| $6 \times .2$      | $11 \times .2$     | $8 \times .3$      | $6 \times .8$      |
| $9 \times .8$      | $7 \times .4$      | $5 \times .2$      | $12 \times .7$     |
| 13. $11 \times .6$ | 14. $10 \times .9$ | 15. $6 \times .9$  | 16. $4 \times .3$  |
| $3 \times .4$      | $7 \times .6$      | $2 \times .8$      | $4 \times .7$      |
| $8 \times .2$      | $5 \times .3$      | $5 \times .5$      | $10 \times .4$     |
| $9 \times .9$      | $2 \times .7$      | $10 \times .6$     | $7 \times .5$      |
| $6 \times .5$      | $12 \times .6$     | $9 \times .7$      | $3 \times .6$      |
| 17. $7 \times .2$  | 18. $11 \times .4$ | 19. $7 \times 1.0$ | 20. $8 \times 1.0$ |
| $4 \times .4$      | $3 \times .3$      | $3 \times 1.1$     | $2 \times 1.2$     |
| $7 \times .8$      | $9 \times .2$      | $5 \times 1.2$     | $7 \times 1.1$     |
| $2 \times .5$      | $5 \times .8$      | $3 \times 1.0$     | $4 \times 1.0$     |
| $8 \times .9$      | $2 \times 1.0$     | $2 \times 1.1$     | $3 \times 1.2$     |
| 21. $4 \times 1.1$ | 22. $5 \times 1.1$ | 23. $6 \times 1.0$ | 24. $7 \times 1.2$ |
| $9 \times 1.0$     | $6 \times 1.2$     | $8 \times 1.1$     | $10 \times 1.1$    |
| $6 \times 1.1$     | $11 \times 1.0$    | $12 \times 1.2$    | $12 \times 1.1$    |
| $4 \times 1.2$     | $9 \times 1.1$     | $11 \times 1.0$    | $8 \times 1.2$     |
| $5 \times 1.0$     | $12 \times 1.0$    | $9 \times 1.2$     | $10 \times 1.2$    |
| $7 \times 1.1$     | $11 \times 1.2$    | $10 \times 1.0$    | $11 \times 1.1$    |



1.	2.	3.	4.	5.
$.6 \div .3$	$1.2 \div .2$	$.8 \div .2$	$1.8 \div .2$	$.8 \div .4$
$1.2 \div .6$	$1.6 \div .4$	$.9 \div .3$	$2.4 \div .4$	$3.2 \div .8$
$2.0 \div .5$	$1.8 \div .9$	$1.4 \div .2$	$1.2 \div .4$	$1.4 \div .7$
$1.5 \div .3$	$2.1 \div .3$	$1.0 \div .5$	$2.2 \div .2$	$1.6 \div .2$
$2.4 \div .6$	$1.6 \div .8$	$2.0 \div .4$	$2.8 \div .4$	$2.4 \div 1.2$
$3.2 \div .4$	$2.7 \div .9$	$1.5 \div .5$	$3.5 \div .5$	$3.0 \div 1.0$
$2.1 \div .7$	$3.5 \div .7$	$2.7 \div .3$	$2.0 \div .2$	$2.2 \div 1.1$
$2.5 \div .5$	$1.0 \div .2$	$2.8 \div .7$	$2.4 \div .8$	$3.6 \div 1.2$
$3.3 \div .3$	$1.8 \div .6$	$3.0 \div .6$	$3.6 \div .9$	$2.0 \div 1.0$
$3.0 \div .5$	$3.0 \div .3$	$3.6 \div .3$	$2.4 \div .3$	$3.3 \div 1.1$

Divide:

6.	7.	8.	9.	10.	11.
$8 \overline{)4.0}$	$12 \overline{)4.8}$	$5 \overline{)4.0}$	$.6 \overline{)36}$	$.4 \overline{)80}$	$1.1 \overline{)55}$
$7 \overline{)5.6}$	$11 \overline{)7.7}$	$9 \overline{)4.5}$	$.5 \overline{)45}$	$.6 \overline{)60}$	$1.2 \overline{)108}$
$5 \overline{)6.0}$	$10 \overline{)7.0}$	$2 \overline{)6.6}$	$.6 \overline{)66}$	$.8 \overline{)96}$	$1.5 \overline{)30}$
$8 \overline{)4.8}$	$21 \overline{)4.2}$	$8 \overline{)8.0}$	$.8 \overline{)56}$	$.4 \overline{)100}$	$2.5 \overline{)100}$
$5 \overline{)7.5}$	$25 \overline{)5.0}$	$6 \overline{)7.2}$	$.7 \overline{)70}$	$.2 \overline{)40}$	$1.5 \overline{)75}$
$7 \overline{)4.2}$	$12 \overline{)6.0}$	$5 \overline{)5.5}$	$.6 \overline{)48}$	$.3 \overline{)66}$	$1.6 \overline{)32}$
$9 \overline{)5.4}$	$25 \overline{)7.5}$	$7 \overline{)4.9}$	$.4 \overline{)44}$	$.2 \overline{)32}$	$2.1 \overline{)42}$
$7 \overline{)8.4}$	$40 \overline{)8.0}$	$4 \overline{)4.0}$	$.6 \overline{)42}$	$3 \overline{)45}$	$3.3 \overline{)99}$

12.	13.	14.	15.	16.
$.7 \div .5$	$2.3 \div .4$	$2.8 \div .9$	$3.5 \div 1.1$	$4.5 \div 2.2$
$.9 \div .2$	$3.2 \div .5$	$3.7 \div .8$	$4.9 \div 1.2$	$6.8 \div 1.1$
$.5 \div .4$	$1.9 \div .6$	$4.8 \div .5$	$5.2 \div 2.5$	$3.8 \div 1.2$
$.8 \div .3$	$4.5 \div .7$	$5.5 \div .6$	$3.4 \div 1.5$	$1.7 \div 1.4$
$.6 \div .5$	$2.5 \div .8$	$1.4 \div .3$	$2.5 \div 1.2$	$6.3 \div 1.5$

1.	2.	3.	4.
$\$.08 \div \$.04$	$\$.12 \div \$.03$	$\$.14 \div \$.07$	$\$.36 \div \$.09$
$.18 \div .02$	$.18 \div .09$	$.25 \div .05$	$.16 \div .02$
$.12 \div .02$	$.14 \div .02$	$.32 \div .04$	$.24 \div .12$
$.06 \div .03$	$.15 \div .03$	$.21 \div .07$	$.22 \div .11$
$.08 \div .02$	$.21 \div .03$	$.33 \div .03$	$.16 \div .08$
$.09 \div .03$	$.24 \div .06$	$.15 \div .05$	$.18 \div .02$
$.12 \div .06$	$.22 \div .02$	$.27 \div .03$	$.12 \div .04$
$.16 \div .04$	$.27 \div .09$	$.28 \div .07$	$.24 \div .08$
$.24 \div .04$	$.35 \div .07$	$.36 \div .03$	$.28 \div .04$
$.32 \div .08$	$.18 \div .06$	$.35 \div .05$	$.36 \div .06$

Divide:

5.	6.	7.	8.	9.	10.
$7 \overline{)42}$	$.04 \overline{)36.}$	$.7 \overline{)84}$	$.01 \overline{)1.}$	$1.2 \overline{)1.44}$	$.13 \overline{)3.9}$
$8 \overline{)56}$	$.08 \overline{)72.}$	$.6 \overline{)66}$	$.03 \overline{).9}$	$2.5 \overline{)1.50}$	$.04 \overline{)4.4}$
$7 \overline{)63}$	$.03 \overline{)21.}$	$.9 \overline{).81}$	$.02 \overline{).8}$	$1.2 \overline{).96}$	$.09 \overline{)7.2}$
$5 \overline{)60}$	$.09 \overline{)54.}$	$.7 \overline{).28}$	$.03 \overline{).6}$	$1.1 \overline{)1.32}$	$.15 \overline{)7.5}$
$7 \overline{)56}$	$.06 \overline{)48.}$	$.9 \overline{).27}$	$.05 \overline{).5}$	$1.5 \overline{).75}$	$.03 \overline{)8.1}$
$9 \overline{)99}$	$.12 \overline{)72.}$	$.7 \overline{).35}$	$.01 \overline{).3}$	$1.2 \overline{).84}$	$.12 \overline{)9.6}$
$6 \overline{)54}$	$.07 \overline{)49.}$	$.8 \overline{).64}$	$.04 \overline{).8}$	$1.1 \overline{)1.10}$	$.07 \overline{)7.0}$
$8 \overline{)24}$	$.04 \overline{)32.}$	$.9 \overline{).63}$	$.02 \overline{).4}$	$1.7 \overline{)1.70}$	$.02 \overline{)2.6}$

11.	12.	13.	14.	15.
$\$.25 \overline{)\$6.00}$	$.07 \overline{)\$5.11}$	$\$.09 \overline{)\$189.}$	$6 \overline{)\$8.40}$	$\$.04 \overline{)\$18.4}$
$.18 \overline{) 3.60}$	$.12 \overline{) 1.80}$	$.07 \overline{) 140.}$	$4 \overline{) 7.20}$	$.02 \overline{) 66.6}$
$.07 \overline{) 1.54}$	$.09 \overline{) 2.79}$	$.08 \overline{) 256.}$	$3 \overline{) 1.26}$	$.08 \overline{) 17.6}$
$.35 \overline{) 7.00}$	$.08 \overline{) 6.02}$	$.11 \overline{) 451.}$	$5 \overline{) 2.00}$	$.07 \overline{) 23.1}$
$.02 \overline{) 1.50}$	$.11 \overline{) 3.52}$	$.05 \overline{) 100.}$	$9 \overline{) 6.03}$	$.12 \overline{) 37.2}$

1.

$1.6 \div .4$   
 $4.8 \div .6$   
 $3.5 \div .7$   
 $1.2 \div .2$   
 $.6 \div .3$

2.

$6.6 \div .6$   
 $9.6 \div .8$   
 $6.3 \div .7$   
 $2.5 \div .5$   
 $1.6 \div .8$

3.

$6.0 \div .6$   
 $8.8 \div 1.1$   
 $.6 \div .2$   
 $5.4 \div .9$   
 $2.8 \div .4$

4.

$2.2 \div .2$   
 $1.8 \div .3$   
 $9.6 \div 1.2$   
 $2.1 \div .7$   
 $3.0 \div .6$

5.

$3.3 \div 1.1$   
 $4.8 \div 1.2$   
 $2.1 \div .3$   
 $3.0 \div .3$   
 $5.5 \div .5$

6.

$3.6 \div .4$   
 $5.0 \div 1.0$   
 $1.8 \div .9$   
 $2.4 \div .2$   
 $2.0 \div .4$

7.

$3.6 \div .6$   
 $8.8 \div .8$   
 $2.0 \div 1.0$   
 $4.0 \div .5$   
 $4.9 \div .7$

8.

$3.6 \div .9$   
 $2.2 \div 1.1$   
 $1.4 \div .2$   
 $.9 \div .3$   
 $4.0 \div 1.0$

9.

$\$.24 \div \$.03$   
 $.70 \div .07$   
 $.32 \div .08$   
 $.12 \div .06$   
 $.48 \div .04$

10.

$\$.45 \div \$.05$   
 $.20 \div .02$   
 $.30 \div .10$   
 $.36 \div .03$   
 $.32 \div .04$

11.

$\$.60 \div \$.12$   
 $.50 \div .05$   
 $.42 \div .07$   
 $.24 \div .06$   
 $.64 \div .08$

12.

$\$.84 \div \$.12$   
 $.18 \div .02$   
 $.80 \div .10$   
 $.27 \div .03$   
 $.63 \div .09$

13.

$\$.80 \div \$.08$   
 $.24 \div .04$   
 $.15 \div .05$   
 $.08 \div .02$   
 $.27 \div .09$

14.

$\$.33 \div \$.03$   
 $.90 \div .10$   
 $.40 \div .08$   
 $.18 \div .06$   
 $.35 \div .05$

15.

$\$.40 \div \$.04$   
 $.28 \div .07$   
 $.12 \div .03$   
 $.30 \div .05$   
 $.81 \div .09$

16.

$\$.16 \div \$.02$   
 $.12 \div .04$   
 $.66 \div .06$   
 $.84 \div .07$   
 $.48 \div .08$

17.

$\$.20 \div \$.05$   
 $.99 \div .09$   
 $.56 \div .08$   
 $1.08 \div .12$   
 $1.21 \div .11$

18.

$\$.24 \div \$.08$   
 $.60 \div .05$   
 $.72 \div .12$   
 $1.20 \div .12$   
 $1.44 \div .12$

19.

$\$.54 \div \$.06$   
 $.63 \div .07$   
 $1.10 \div .11$   
 $1.20 \div .12$   
 $.72 \div .12$

20.

$\$.56 \div \$.07$   
 $.42 \div .07$   
 $1.32 \div .12$   
 $.77 \div .11$   
 $1.00 \div .10$

What name is given to

- |                             |                        |
|-----------------------------|------------------------|
| 1. $\frac{1}{3}$ of a yard? | 2. 12 times a unit?    |
| $\frac{1}{2}$ of a quart?   | 100 times a cent?      |
| $\frac{1}{4}$ of a pint?    | 24 times an hour?      |
| $\frac{1}{10}$ of a dollar? | 20 times a unit?       |
| $\frac{1}{7}$ of a week?    | 36 times an inch?      |
| $\frac{1}{4}$ of a bushel?  | 60 times a minute?     |
| $\frac{1}{12}$ of a year?   | 9 times a square foot? |
| $\frac{1}{16}$ of a pound?  | 2000 times a pound?    |
| $\frac{1}{8}$ of a peck?    | 100 times a year?      |
| $\frac{1}{2}$ of a gallon?  | 320 times a rod?       |
| $\frac{1}{12}$ of a foot?   | 32 times a quart?      |
| $\frac{1}{4}$ of a dollar?  | 8 times a pint?        |

---

Give answers to the following questions in their lowest terms :

3. 4 quarts is what fractional part of a bushel?  
8 units is what fractional part of a dozen?  
10 months is what fractional part of a year?  
12 ounces is what fractional part of a pound?  
24 minutes is what fractional part of an hour?
4.  $4\frac{1}{2}$  inches is what fractional part of a yard?  
200 pounds is what fractional part of a ton?  
3 days is what fractional part of a week?  
2 pints is what fractional part of a gallon?  
16 hours is what fractional part of a day?

---

Express

5. 2 quarts and 1 pint as the fraction of a gallon.  
2 feet and 9 inches as the fraction of a yard.  
1 peck and 4 quarts as the fraction of a bushel.
6. 3 gallons, 3 quarts, and 1 pint as gallons.  
10 bushels, 3 pecks, and 4 quarts as bushels.  
5 yards, 2 feet, and 9 inches as yards.



1.

3 hr. is how many min.?  
 2 lb. is how many oz.?  
 4 gal. is how many qt.?  
 4 ft. is how many in.?  
 3 wk. is how many da.?  
 5 yr. is how many mo.?  
 4 bu. is how many pk.?  
 10 min. is how many sec.?

2.

6 sq. yd. is how many sq. ft.?  
 8 pk. is how many qt.?  
 12 yd. is how many ft.?  
 9 dol. is how many qr.?  
 5 doz. is how many units?  
 2 rd. is how many ft.?  
 16 qt. is how many pt.?  
 2 da. is how many hr.?

3.

Express

$3\frac{1}{2}$  bushels as pecks.  
 $4\frac{1}{2}$  feet as inches.  
 2.5 days as hours.  
 $2\frac{1}{4}$  (short) tons as pounds.  
 $1\frac{1}{3}$  feet as inches.  
 $5\frac{1}{4}$  dozen as units.  
 1.5 bushels as pecks.  
 $\frac{1}{2}$  yard as inches.

4.

Express

$\frac{3}{4}$  of a yard as inches.  
 $1\frac{1}{4}$  yards as inches.  
 4 rods as feet.  
 $7\frac{1}{2}$  years as months.  
 $1\frac{1}{8}$  dollars as cents.  
 $8\frac{1}{2}$  pecks as quarts.  
 $2\frac{1}{2}$  quires as sheets.  
 $3\frac{1}{3}$  sq. yards as sq. feet.

5.

How many hr. in 5 da.?  
 How many sec. in 1 hr.?  
 How many pt. in 4 gal.?  
 How many gal. in 60 pt.?  
 How many qt. in  $1\frac{3}{4}$  bu.?  
 How many bu. in 176 qt.?  
 How many yr. in 180 mo.?  
 How many hr. in  $1\frac{2}{3}$  da.?

6.

How many sq. rd. in  $\frac{3}{4}$  A.?  
 How many rd. in 2 mi.?  
 How many in. in  $2\frac{1}{2}$  yd.?  
 How many ft. in  $\frac{1}{2}$  mi.?  
 How many gi. in 2 gal.?  
 How many pt. in  $2\frac{1}{2}$  pk.?  
 How many oz. in  $5\frac{1}{4}$  lb.?  
 How many rt. angles in  $270^\circ$ ?

1.

How many qt. in 16 pt.?  
 How many wk. in 84 da.?  
 How many lb. in 48 oz.?  
 How many gal. in 40 qt.?  
 How many yd. in 72 in.?  
 How many da. in 48 hr.?  
 How many doz. in 96 units?  
 How many yd. in 36 ft.?

2.

How many hr. in 600 min.?  
 How many bu. in 24 pk.?  
 How many pk. in 56 qt.?  
 How many min. in 120 sec.?  
 How many ft. in 84 in.?  
 How many rd. in 11 yd.?  
 How many sq. yd. in 27 sq. ft.?  
 How many yr. in 120 mo.?

3.

75 qt. is how many gal.?  
 30 in. is how many ft.?  
 15 pt. is how many qt.?  
 66 mo. is how many yr.?  
 20 oz. is how many lb.?  
 25 ft. is how many yd.?  
 30 units is how many doz.?  
 100 min. is how many hr.?

4.

22 pk. is how many bu.?  
 20 qt. is how many pk.?  
 15 da. is how many wk.?  
 72 sq. in. is how many sq. ft.?  
 60 sheets is how many quires?  
 5280 ft. is how many miles?  
 5000 lb. is how many T.?  
 45 in. is how many yd.?

5.

Express

4 rods as yards.  
 $\frac{1}{2}$  mile as rods.  
 $1\frac{1}{2}$  rt. angles as degrees.  
 36 sq. inches as sq. feet.  
 2 cu. yards as cu. feet.  
 2 cords as cubic feet.  
 $\frac{1}{2}$  cord as cubic feet.  
 1 ream as sheets.

6.

Express

20 tons as pounds.  
 $1\frac{1}{4}$  square feet as square inches.  
 100 quarts as bushels.  
 $\frac{1}{2}$  bushel as pints.  
 75 units as dozens.  
 88 days as weeks.  
 2318 cents as dollars.  
 345 minutes as hours.

1.

Express

1 ft. 4 in. as inches.  
 2 yd. 1 ft. as feet.  
 3 gal. 2 qt. as quarts.  
 1 lb. 6 oz. as ounces.  
 4 pt. 2 gi. as gills.  
 3 score and 10 yr. as years.  
 3 bu. 3 pk. as pecks.  
 4 pk. 7 qt. as quarts.

2.

Express

31 qt. as gallons.  
 40 oz. as pounds.  
 17 ft. as yards.  
 50 in. as feet.  
 63 da. as weeks.  
 30 hr. as days.  
 75 mo. as years.  
 100 units as dozens.

3.

Express

4 T. 8 cwt. as cwt.  
 3 da. 6 hr. as hours.  
 5 yr. 8 mo. as months.  
 5 hr. 30 min. as minutes.  
 2 mi. 18 rd. as rods.  
 10 min. 10 sec. as seconds.  
 8 lb. 2 oz. as ounces.  
 12 bu. 3 pk. as pecks.

4

Express

4500 lb. as tons.  
 250 min. as hours.  
 117 qt. as gallons.  
 200 sq. rd. as acres.  
 150 in. as feet.  
 $\frac{3}{4}$  A. as sq. rods.  
 $\frac{3}{4}$  da. as hours.  
 $\frac{3}{4}$  lb. as ounces.

5.

Express

13 gal. 1 qt. 1 pt. as quarts.  
 2 T. 5 cwt. 5 lb. as pounds.  
 2 rd. 2 yd. 2 ft. as feet.  
 2 rd. 12 ft. 6 in. as feet.  
 1 bu. 3 pk. 4 qt. as quarts.  
 3 da. 8 hr. 10 min. as hours.  
 15° - 45' - 30'' as minutes.

Pupils in elementary grades should go through these exercises first with the aid of the clock face, clearly visualizing each thought process.

How long a time is it

- |                            |                                 |
|----------------------------|---------------------------------|
| 1. From 9 A.M. to 7 P.M.?  | 2. From 7.30 P.M. to 6.30 A.M.? |
| From 8 A.M. to 5.30 P.M.?  | From 11.30 P.M. to 9 A.M.?      |
| From 7 A.M. to 6 P.M.?     | From 7.45 P.M. to 6 A.M.?       |
| From 8.30 A.M. to 4 P.M.?  | From 10 P.M. to 7.30 A.M.?      |
| From 10.30 A.M. to 8 P.M.? | From 9.30 P.M. to 7 A.M.?       |

At what time must you start in order to reach your destination at 7.45 A.M. if the walk requires

- |                |               |                |
|----------------|---------------|----------------|
| 3. 20 minutes? | 4. 5 minutes? | 5. 10 minutes? |
| Half an hour?  | 25 minutes?   | 35 minutes?    |
| 15 minutes?    | 8 minutes?    | 3 minutes?     |

6. If your watch is 8 minutes fast, what time is it when your watch says 4.15? 12.30? 3.45? 6.18? Noon? 8.04?

How many minutes of each school day should be given to a daily subject which is scheduled to have

- |                                   |                                |
|-----------------------------------|--------------------------------|
| 7. $2\frac{1}{2}$ hours per week? | 8. 4 hours per week?           |
| $1\frac{3}{4}$ hours per week?    | $1\frac{1}{4}$ hours per week? |
| 6 hours per week?                 | $3\frac{1}{2}$ hours per week? |

Find the time that a train may be expected to arrive, if

- |                                |                                  |
|--------------------------------|----------------------------------|
| 9.                             | 10.                              |
| Due at 11.20; 40 minutes late. | Due at 9.10; 1 hr. 20 min. late. |
| Due at 6.45; 35 minutes late.  | Due at 4.35; 45 minutes late.    |
| Due at 10.12; 18 minutes late. | Due at 8.54; 10 minutes late.    |
| Due at 3.22; 50 minutes late.  | Due at 7.37; 25 minutes late.    |
| Due at 5.48; 30 minutes late.  | Due at 1.15; 55 minutes late.    |

What per cent of a number is

1.	2.	3.	4.
$\frac{1}{2}$ of it?	$\frac{1}{8}$ of it?	$\frac{1}{10}$ of it?	$\frac{1}{25}$ of it?
$\frac{1}{3}$ of it?	$\frac{1}{7}$ of it?	$\frac{1}{12}$ of it?	$\frac{1}{30}$ of it?
$\frac{1}{4}$ of it?	$\frac{1}{6}$ of it?	$\frac{1}{18}$ of it?	$\frac{1}{40}$ of it?
$\frac{1}{5}$ of it?	$\frac{1}{5}$ of it?	$\frac{1}{20}$ of it?	$\frac{1}{50}$ of it?
$\frac{2}{3}$ of it?	$\frac{2}{3}$ of it?	$\frac{2}{3}$ of it?	$\frac{2}{3}$ of it?

---

What per cent of a number is

5.	6.	7.	8.
$\frac{2}{3}$ of it?	$\frac{2}{7}$ of it?	$\frac{2}{10}$ of it?	$\frac{2}{25}$ of it?
$\frac{3}{4}$ of it?	$\frac{3}{8}$ of it?	$\frac{3}{12}$ of it?	$\frac{3}{25}$ of it?
$\frac{3}{5}$ of it?	$\frac{3}{6}$ of it?	$\frac{3}{18}$ of it?	$\frac{3}{25}$ of it?
$\frac{4}{5}$ of it?	$\frac{4}{8}$ of it?	$\frac{4}{20}$ of it?	$\frac{4}{20}$ of it?
$\frac{4}{5}$ of it?	$\frac{4}{8}$ of it?	$\frac{4}{20}$ of it?	$\frac{4}{20}$ of it?
$\frac{5}{8}$ of it?	$\frac{5}{10}$ of it?	$\frac{5}{20}$ of it?	$\frac{5}{20}$ of it?
$\frac{6}{8}$ of it?	$\frac{6}{10}$ of it?	$\frac{6}{25}$ of it?	$\frac{6}{20}$ of it?

---

What per cent of a number is

9.	10.
Once the number?	$2\frac{1}{2}$ times the number?
Twice the number?	8 times the number?
4 times the number?	$1\frac{1}{2}$ times the number?
$1\frac{1}{2}$ times the number?	3 times the number?
5 times the number?	$1\frac{1}{3}$ times the number?

What per cent

11.	12.
Of 50 is 150?	Of 80 is 400?
Of 40 is 60?	Of 75 is 100?
Of $12\frac{1}{2}$ is 50?	Of 60 is 80?
Of 16 is 32?	Of $6\frac{1}{4}$ is 50?

What part of a number is

1.	2.	3.
50% of it?	$33\frac{1}{3}\%$ of it?	20% of it?
25% of it?	$16\frac{2}{3}\%$ of it?	10% of it?
$12\frac{1}{2}\%$ of it?	$8\frac{1}{3}\%$ of it?	5% of it?
$6\frac{1}{4}\%$ of it?	4% of it?	$2\frac{1}{2}\%$ of it?
$14\frac{3}{4}\%$ of it?	2% of it?	$3\frac{1}{8}\%$ of it?
3% of it?	1% of it?	100% of it?

---

What part of **anything** is

4.	5.	6.
75% of it?	$37\frac{1}{2}\%$ of it?	70% of it?
$66\frac{2}{3}\%$ of it?	$87\frac{1}{2}\%$ of it?	15% of it?
40% of it?	30% of it?	80% of it?
60% of it?	$83\frac{1}{3}\%$ of it?	24% of it?
80% of it?	90% of it?	$18\frac{3}{4}\%$ of it?
$28\frac{1}{4}\%$ of it?	$62\frac{1}{2}\%$ of it?	45% of it?

---

What part of a number is

7.	8.	9.
$\frac{1}{2}\%$ of it?	$\frac{3}{5}\%$ of it?	$\frac{1}{3}\%$ of it?
$\frac{3}{4}\%$ of it?	$\frac{1}{4}\%$ of it?	$\frac{1}{5}\%$ of it?
$\frac{2}{5}\%$ of it?	$\frac{3}{8}\%$ of it?	$\frac{1}{6}\%$ of it?

---

How many times a number is

10.	11.	12.
400% of it?	125% of it?	300% of it?
200% of it?	300% of it?	275% of it?
150% of it?	450% of it?	100% of it?

The number sought is 100%.

What is the number of which

1.	2.	3.
15 is 10%?	72 is 50%?	20 is 1%?
25 is $12\frac{1}{2}\%$ ?	10 is $16\frac{2}{3}\%$ ?	10 is 4%?
16 is 20%?	11 is 25%?	18 is 50%?
12 is $8\frac{1}{3}\%$ ?	4 is $2\frac{1}{2}\%$ ?	9 is $33\frac{1}{3}\%$ ?
6 is 4%?	7 is 2%?	12 is 5%?
3 is $6\frac{1}{4}\%$ ?	6 is 1%?	7 is $12\frac{1}{2}\%$ ?
4 is 5%?	45 is 100%?	60 is 10%?
16 is $33\frac{1}{3}\%$ ?	15 is 20%?	5 is $2\frac{1}{2}\%$ ?

---

Find the number of which

4.	5.	6.
24 is $37\frac{1}{2}\%$ .	35 is $62\frac{1}{2}\%$ .	63 is $87\frac{1}{2}\%$ .
60 is 75%.	72 is 90%.	18 is 45%.
9 is 30%.	16 is 80%.	6 is 15%.
50 is $66\frac{2}{3}\%$ .	12 is $37\frac{1}{2}\%$ .	40 is 8%.
45 is $83\frac{1}{3}\%$ .	4 is 40%.	54 is 6%.
90 is 60%.	33 is 75%.	48 is 1%.
49 is $87\frac{1}{2}\%$ .	20 is $66\frac{2}{3}\%$ .	7 is $3\frac{1}{3}\%$ .
100 is 40%.	42 is 70%.	25 is $62\frac{1}{2}\%$ .

---

To find: The sum of which

7.	8.	9.
\$50 is 125%.	\$26 is 200%.	\$120 is $133\frac{1}{3}\%$ .
\$75 is 150%.	\$42 is 105%.	\$100 is $166\frac{2}{3}\%$ .
\$15 is 300%.	\$18 is 120%.	\$260 is 130%.
\$90 is $112\frac{1}{2}\%$ .	\$36 is 300%.	\$150 is 125%.
\$84 is 175%.	\$50 is 250%.	\$240 is 160%.

What is

1.

- 25% of \$50?  
 10% of \$40?  
 $12\frac{1}{2}\%$  of \$64?  
 $33\frac{1}{3}\%$  of \$18?  
 $6\frac{1}{4}\%$  of \$48?  
 $16\frac{2}{3}\%$  of \$36?  
 5% of \$20?  
 4% of \$60?

2.

- 50% of 32?  
 20% of 45?  
 $8\frac{1}{3}\%$  of 24?  
 $11\frac{1}{3}\%$  of 63?  
 5% of 80?  
 25% of 28?  
 $14\frac{2}{7}\%$  of 56?  
 $33\frac{1}{3}\%$  of 39?

3.

- 1% of 200?  
 3% of 400?  
 6% of 500?  
 8% of 300?  
 4% of 100?  
 5% of 1000?  
 7% of 2000?  
 9% of 3000?

Find

4.

- 75% of 200.  
 $66\frac{2}{3}\%$  of 450.  
 $37\frac{1}{2}\%$  of 160.  
 40% of 250.  
 $62\frac{1}{2}\%$  of 320.  
 $87\frac{1}{2}\%$  of 240.  
 80% of 400.  
 $83\frac{1}{3}\%$  of 300.

5.

- 1% of \$12.  
 1% of \$ 1.50  
 1% of \$ 3.00  
 1% of \$ 6.20  
 1% of \$30.  
 1% of \$25.50  
 1% of \$ 7.90  
 1% of \$ 1.25

6.

- $1\frac{1}{2}\%$  of \$400.  
 $4\frac{1}{2}\%$  of \$200.  
 $2\frac{1}{4}\%$  of \$800.  
 $3\frac{1}{3}\%$  of \$600.  
 $5\frac{1}{2}\%$  of \$100.  
 $8\frac{1}{4}\%$  of \$2000.  
 $6\frac{1}{2}\%$  of \$1000.  
 $1\frac{1}{4}\%$  of \$4000.

What is

7.

- $\frac{1}{8}\%$  of \$1600?  
 $\frac{1}{2}\%$  of \$400?  
 $\frac{1}{3}\%$  of \$1000?  
 $\frac{1}{3}\%$  of \$600?

8.

- $\frac{1}{4}\%$  of \$2000?  
 $\frac{1}{8}\%$  of \$1200?  
 $\frac{2}{3}\%$  of \$1500?  
 $\frac{3}{4}\%$  of \$800?

9.

- $\frac{2}{3}\%$  of \$900?  
 $\frac{3}{8}\%$  of \$2400?  
 $\frac{3}{10}\%$  of \$2000?  
 $\frac{4}{5}\%$  of \$2500?

Tell how to express decimally

10.

- $\frac{1}{4}$  per cent.  
 $\frac{1}{2}$  per cent.

11.

- $\frac{1}{3}$  per cent.  
 $\frac{1}{3}$  per cent.

12.

- $\frac{3}{4}$  per cent.  
 $\frac{2}{3}$  per cent.

13.

- $\frac{5}{8}$  per cent.  
 $\frac{2}{3}$  per cent.



**Increase the number**

1.	2.	3.
12 by 50%.	40 by 20%.	35 by $14\frac{2}{7}\%$ .
15 by 20%.	36 by $33\frac{1}{3}\%$ .	80 by 5%.
20 by 10%.	20 by 25%.	45 by 20%.
8 by 25%.	100 by 1%.	28 by 25%.
6 by $33\frac{1}{3}\%$ .	50 by 50%.	70 by 10%.
16 by $12\frac{1}{2}\%$ .	25 by 4%.	27 by $33\frac{1}{3}\%$ .
18 by $16\frac{1}{3}\%$ .	60 by 5%.	30 by $16\frac{2}{3}\%$ .
24 by $8\frac{1}{3}\%$ .	32 by $6\frac{1}{4}\%$ .	64 by $12\frac{1}{2}\%$ .

---

**Decrease the number**

4.	5.	6.
10 by 20%.	15 by $33\frac{1}{3}\%$ .	9 by $66\frac{2}{3}\%$ .
20 by 5%.	25 by 4%.	12 by 75%.
30 by $16\frac{2}{3}\%$ .	36 by 25%.	16 by $12\frac{1}{2}\%$ .
40 by $12\frac{1}{2}\%$ .	48 by $6\frac{1}{4}\%$ .	14 by $14\frac{2}{7}\%$ .
50 by 50%.	56 by $12\frac{1}{2}\%$ .	24 by $16\frac{2}{3}\%$ .
60 by $8\frac{1}{3}\%$ .	72 by 50%.	18 by $33\frac{1}{3}\%$ .
70 by $14\frac{2}{7}\%$ .	84 by $8\frac{1}{3}\%$ .	28 by 25%.
80 by $6\frac{1}{4}\%$ .	96 by $16\frac{2}{3}\%$ .	32 by $6\frac{1}{4}\%$ .

---

**Increase**

7.
\$64 by 25 per cent.
\$48 by $16\frac{2}{3}$ per cent.
\$75 by 12 per cent.
\$36 by $66\frac{2}{3}$ per cent.
\$50 by 6 per cent.

**Decrease**

8.
\$100 by 15 per cent.
\$120 by 50 per cent.
\$250 by 40 per cent.
\$320 by $37\frac{1}{2}$ per cent.
\$500 by 4 per cent.

What per cent is

1.	2.	3.
2 of 4?	1 of 5?	\$ 3 of \$4?
5 of 10?	2 of 10?	\$ 8 of \$12?
3 of 12?	8 of 4?	\$ 9 of \$12?
2 of 6?	2 of 16?	\$ 5 of \$25?
1 of 4?	3 of 21?	\$ 2 of \$3?
9 of 3?	2 of 20?	\$10 of \$4?
15 of 5?	30 of 10?	\$ 3 of \$8?
1 of 2?	10 of 20?	\$15 of \$10?

---

What per cent is

4.	5.	6.
25 of 50?	$33\frac{1}{3}$ of $66\frac{2}{3}$ ?	25 of $62\frac{1}{2}$ ?
$12\frac{1}{2}$ of 25?	$8\frac{1}{3}$ of 50?	50 of 75?
$6\frac{1}{4}$ of $12\frac{1}{2}$ ?	$12\frac{1}{2}$ of $37\frac{1}{2}$ ?	$12\frac{1}{2}$ of $87\frac{1}{2}$ ?
$37\frac{1}{2}$ of 75?	$16\frac{2}{3}$ of $33\frac{1}{3}$ ?	$6\frac{1}{4}$ of 50?
$6\frac{1}{4}$ of 25?	25 of 75?	25 of $87\frac{1}{2}$ ?
$12\frac{1}{2}$ of 50?	50 of $62\frac{1}{2}$ ?	$16\frac{2}{3}$ of $66\frac{2}{3}$ ?
$37\frac{1}{2}$ of 50?	$12\frac{1}{2}$ of $62\frac{1}{2}$ ?	$8\frac{1}{3}$ of 25?
$8\frac{1}{3}$ of $33\frac{1}{3}$ ?	$8\frac{1}{3}$ of $16\frac{2}{3}$ ?	$3\frac{1}{3}$ of 10?

---

Compare

7.

$\frac{1}{2}$  of 5000 people with  $\frac{1}{2}\%$  of them.

$\frac{2}{5}$  of a \$1000 bond with  $\frac{2}{5}\%$  of it.

$\frac{1}{4}$  of a ton of coal with  $\frac{1}{4}\%$  of it.

$\frac{2}{3}$  of your weight with  $\frac{2}{3}\%$  of it.

$\frac{5}{8}$  of our national debt with  $\frac{5}{8}\%$  of it.

What ratio does the first answer bear to the second, in each case?

1. A pint is what per cent of a quart?  
 A foot is what per cent of a yard?  
 A nickel is what per cent of a quarter?  
 A nickel is what per cent of a dime?  
 A gill is what per cent of a pint?  
 A quart is what per cent of a gallon?  
 A cent is what per cent of a dime?  
 A cent is what per cent of a nickel?  
 A peck is what per cent of a bushel?  
 A week is what per cent of a fortnight?
- 

2. What per cent of a gallon is a pint?  
 What per cent of a peck is a quart?  
 What per cent of a foot is an inch?  
 What per cent of a pound is an ounce?  
 What per cent of a week is a day?  
 What per cent of a year is a month?  
 What per cent of a quart is a gill?  
 What per cent of a peck is a pint?  
 What per cent of a cord is a cord foot?  
 What per cent of a decade is a year?
- 

**To the Pupil:** Consult your dictionary or arithmetic if you need help.

3. A dozen is what per cent of a gross?  
 A foot is what per cent of a fathom?  
 A quarter is what per cent of a year?  
 A hundred weight is what per cent of a ton?  
 A quire is what per cent of a ream?  
 A cubic foot is what per cent of a cord foot?

1. What per cent of a gallon is  
1 qt.? 2 qt.? 3 qt.? 4 qt.? 1 pt.? 3 pt.? 5 pt.?
2. What per cent of a pound is  
8 oz.? 4 oz.? 12 oz.? 1 oz.? 2 oz.? 6 oz.? 16 oz.?
3. What per cent of a peck is  
8 qt.? 4 qt.? 2 qt.? 6 q. ? 1 qt.? 7 qt.? 1 pt.?
4. What per cent of a ton is  
500 lb.? 200 lb.? 1000 lb.? 1500 lb.? 20 lb.? 100 lb.?
5. What per cent of a day is  
16 hr.? 12 hr.? 8 hr.? 6 hr.? 18 hr.? 3 hr.? 9 hr.?
6. What per cent of an hour is  
15 min.? 12 min.? 6 min.? 40 min.? 45 min.? 20 min.?
7. What per cent of a mile is  
160 rd.? 40 rd.? 80 rd.? 240 rd.? 32 rd.? 120 rd.?
8. What per cent of a dozen is  
10 units? 9 units? 8 units? 4 units? 3 units? 2 units?
9. What per cent of a right angle is  
90°? 45°? 30°? 60°? 18°? 15°? 75°? 27°?
10. What per cent of a bushel is  
16 qt.? 8 qt.? 24 qt.? 1 pk.? 3 pk.? 4 pk.?  $\frac{1}{2}$  pk.?
11. What per cent of a month (30 days) is  
10 da.? 6 da.? 15 da.? 20 da.? 3 da.? 5 da.? 24 da.?

1. 25% of a peck      = how many quarts?  
50% of a year      = how many months?  
50% of a day      = how many hours?  
25% of a quart      = how many pints?  
25% of a yard      = how many inches?  
75% of a yard      = how many inches?  
50% of a pound      = how many ounces?  
75% of a foot      = how many inches?
  
2. 25% of an acre      = how many square rods?  
50% of a circumference = how many degrees?  
75% of a mile      = how many rods?  
50% of a leap-year      = how many days?  
25% of a ton      = how many pounds?  
25% of a square foot      = how many square inches?  
75% of an hour      = how many minutes?  
75% of a dozen      = how many things?
  
3. 50% of a bushel      = how many pints?  
50% of a mile      = how many feet?  
25% of a cord      = how many cubic feet?  
75% of an acre      = how many square rods?  
50% of a rt. angle      = how many degrees?  
75% of a gallon      = how many gills?  
25% of a square mile = how many acres?  
75% of a ream      = how many sheets of paper?

1.  $33\frac{1}{3}\%$  of a yard = how many inches?  
10% of a minute = how many seconds?  
20% of a quarter = how many cents?  
 $12\frac{1}{2}\%$  of a pound = how many ounces?  
 $33\frac{1}{3}\%$  of a dozen = how many units?  
 $12\frac{1}{2}\%$  of a day = how many hours?  
 $16\frac{2}{3}\%$  of a quire = how many sheets?  
20% of a score = how many units?
- 

2.  $66\frac{2}{3}\%$  of a foot = how many inches?  
 $37\frac{1}{2}\%$  of a peck = how many quarts?  
60% of a dime = how many cents?  
 $62\frac{1}{2}\%$  of a pound = how many ounces?  
 $8\frac{1}{3}\%$  of a dozen = how many units?  
40% of an hour = how many minutes?  
 $87\frac{1}{2}\%$  of a day = how many hours?  
 $6\frac{1}{4}\%$  of a pound = how many ounces?
- 

How many inches in

3. 50% of a yard?  
25% of a yard?  
75% of a yard?  
 $33\frac{1}{3}\%$  of a yard?  
 $66\frac{2}{3}\%$  of a yard?  
 $8\frac{1}{3}\%$  of a yard?  
 $12\frac{1}{2}\%$  of a yard?  
 $37\frac{1}{2}\%$  of a yard?  
 $62\frac{1}{2}\%$  of a yard?  
 $16\frac{2}{3}\%$  of a yard?

How many square inches in

4. 50% of a square foot?  
25% of a square foot?  
75% of a square foot?  
 $33\frac{1}{3}\%$  of a square foot?  
 $66\frac{2}{3}\%$  of a square foot?  
 $16\frac{2}{3}\%$  of a square foot?  
 $8\frac{1}{3}\%$  of a square foot?  
 $12\frac{1}{2}\%$  of a square foot?  
 $37\frac{1}{2}\%$  of a square foot?  
 $62\frac{1}{2}\%$  of a square foot?

1. 28	2. 100	3. 18	4. 150	5. 80	6. 30	7. 100
10	40	9	39	24	72	25
2	8	33	24	40	6	40
36	48	6	36	64	42	5
18	32	21	60	16	18	35
6	24	15	45	32	36	50
50	4	90	12	48	60	10
12	20	30	3	72	48	150
22	44	75	48	8	12	75
30	16	27	66	56	54	60

Name as rapidly as you can

1. 50% of each number in columns 1 and 2.
2. 25% of each number in column 2.
3. 75% of each number in column 2.
4.  $33\frac{1}{3}\%$  of each number in columns 3 and 4.
5.  $66\frac{2}{3}\%$  of each number in column 3.
6.  $66\frac{2}{3}\%$  of each number in column 4.
7.  $12\frac{1}{2}\%$  of each number in column 5.
8.  $37\frac{1}{2}\%$  of each number in column 5.
9.  $62\frac{1}{2}\%$  of each number in column 5.
10.  $87\frac{1}{2}\%$  of each number in column 5.
11.  $16\frac{2}{3}\%$  of each number in column 6.
12.  $83\frac{1}{3}\%$  of each number in column 6.
13. 20% of each number in column 7.
14. 40% of each number in column 7.
15. 60% of each number in column 7.
16. 80% of each number in column 7.

17. What common fractions are the same as these per cents?

10%	25%	$12\frac{1}{2}\%$	$8\frac{1}{3}\%$	$33\frac{1}{3}\%$	75%	$66\frac{2}{3}\%$	60%
$16\frac{2}{3}\%$	$6\frac{1}{4}\%$	40%	$37\frac{1}{2}\%$	50%	$87\frac{1}{2}\%$	20%	$83\frac{1}{3}\%$
30%	5%	80%	4%	70%	100%	$14\frac{2}{7}\%$	90%

Find area and perimeter of

- |                     |                            |
|---------------------|----------------------------|
| 1. A 5-inch square. | 2. A rectangle 5'' by 2''. |
| A 10-inch square.   | A rectangle 3'' by 7''.    |
| A 6-inch square.    | A rectangle 4'' by 10''.   |
| A 9-inch square.    | A rectangle 12'' by 1''.   |
| A 4-inch square.    | A rectangle 8'' by 2''.    |
| A 3-foot square.    | A rectangle 7' by 5'.      |
| A 7-foot square.    | A rectangle 2' by 11'.     |
| A 12-foot square.   | A rectangle 10' by 6'.     |
| An 8-foot square.   | A rectangle 9' by 5'.      |
| An 11-foot square.  | A rectangle 4' by 3'.      |
- 

3. What is the perimeter of

- A rectangle  $6'' \times 4\frac{1}{2}''$ ?
- A rectangle  $2\frac{1}{2}'' \times 4''$ ?
- A rectangle  $8'' \times 1\frac{1}{4}''$ ?
- A rectangle  $9'' \times 2\frac{1}{3}''$ ?
- A rectangle  $10'' \times 5\frac{1}{2}''$ ?
- An oblong  $1' \times \frac{1}{2}'$ ?
- An oblong  $12' \times 15'$ ?
- An oblong  $15' \times 20'$ ?
- An oblong  $20' \times 5'$ ?
- An oblong  $30' \times 2'$ ?

4. What is the area of

- A  $2\frac{1}{2}''$  square?
  - A  $3\frac{1}{3}''$  square?
  - A  $5\frac{1}{2}''$  square?
  - A  $1\frac{1}{4}''$  square?
  - A  $4\frac{1}{2}''$  square?
  - A 20' square?
  - A 30' square?
  - A  $2\frac{1}{4}'$  square?
  - A 10' square?
  - A  $1\frac{1}{2}'$  square?
- 

5. Find perimeter and area of

- A pasture 40 rods square.
- A garden  $30 \times 50$  feet.
- A building lot  $50 \times 100$  feet.
- A playground  $100 \times 200$  feet.
- A park  $25 \times 30$  rods.



The number sought is 100%.

What is the number of which

1.	2.	3.
15 is 10%?	72 is 50%?	20 is 1%?
25 is $12\frac{1}{2}\%$ ?	10 is $16\frac{2}{3}\%$ ?	10 is 4%?
16 is 20%?	11 is 25%?	18 is 50%?
12 is $8\frac{1}{3}\%$ ?	4 is $2\frac{1}{2}\%$ ?	9 is $33\frac{1}{3}\%$ ?
6 is 4%?	7 is 2%?	12 is 5%?
3 is $6\frac{1}{4}\%$ ?	6 is 1%?	7 is $12\frac{1}{2}\%$ ?
4 is 5%?	45 is 100%?	60 is 10%?
16 is $33\frac{1}{3}\%$ ?	15 is 20%?	5 is $2\frac{1}{3}\%$ ?

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Find the number of which

4.	5.	6.
24 is $37\frac{1}{2}\%$ .	35 is $62\frac{1}{2}\%$ .	63 is $87\frac{1}{2}\%$ .
60 is 75%.	72 is 90%.	18 is 45%.
9 is 30%.	16 is 80%.	6 is 15%.
50 is $66\frac{2}{3}\%$ .	12 is $37\frac{1}{2}\%$ .	40 is 8%.
45 is $83\frac{1}{3}\%$ .	4 is 40%.	54 is 6%.
90 is 60%.	33 is 75%.	48 is 1%.
49 is $87\frac{1}{2}\%$ .	20 is $66\frac{2}{3}\%$ .	7 is $3\frac{1}{3}\%$ .
100 is 40%.	42 is 70%.	25 is $62\frac{1}{2}\%$ .

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To find: The sum of which

7.	8.	9.
\$50 is 125%.	\$26 is 200%.	\$120 is $133\frac{1}{3}\%$ .
\$75 is 150%.	\$42 is 105%.	\$100 is $166\frac{2}{3}\%$ .
\$15 is 300%.	\$18 is 120%.	\$260 is 130%.
\$90 is $112\frac{1}{2}\%$ .	\$36 is 300%.	\$150 is 125%.
\$84 is 175%.	\$50 is 250%.	\$240 is 160%.

What is

1.	2.	3.
25% of \$50?	50% of 32?	1% of 200?
10% of \$40?	20% of 45?	3% of 400?
$12\frac{1}{2}\%$ of \$64?	$8\frac{1}{3}\%$ of 24?	6% of 500?
$33\frac{1}{3}\%$ of \$18?	$11\frac{1}{3}\%$ of 63?	8% of 300?
$6\frac{1}{4}\%$ of \$48?	5% of 80?	4% of 100?
$16\frac{2}{3}\%$ of \$36?	25% of 28?	5% of 1000?
5% of \$20?	$14\frac{2}{7}\%$ of 56?	7% of 2000?
4% of \$60?	$33\frac{1}{3}\%$ of 39?	9% of 3000?

Find

4.	5.	6.
75% of 200.	1% of \$12.	$1\frac{1}{2}\%$ of \$400.
$66\frac{2}{3}\%$ of 450.	1% of \$ 1.50	$4\frac{1}{2}\%$ of \$200.
$37\frac{1}{2}\%$ of 160.	1% of \$ 3.00	$2\frac{1}{4}\%$ of \$800.
40% of 250.	1% of \$ 6.20	$3\frac{1}{3}\%$ of \$600.
$62\frac{1}{2}\%$ of 320.	1% of \$30.	$5\frac{1}{2}\%$ of \$100.
$87\frac{1}{2}\%$ of 240.	1% of \$25.50	$8\frac{1}{4}\%$ of \$2000.
80% of 400.	1% of \$ 7.90	$6\frac{1}{2}\%$ of \$1000.
$83\frac{1}{3}\%$ of 300.	1% of \$ 1.25	$1\frac{1}{4}\%$ of \$4000.

What is

7.	8.	9.
$\frac{1}{8}\%$ of \$1600?	$\frac{1}{4}\%$ of \$2000?	$\frac{2}{3}\%$ of \$900?
$\frac{1}{3}\%$ of \$400?	$\frac{1}{6}\%$ of \$1200?	$\frac{3}{8}\%$ of \$2400?
$\frac{1}{5}\%$ of \$1000?	$\frac{2}{5}\%$ of \$1500?	$\frac{3}{10}\%$ of \$2000?
$\frac{1}{3}\%$ of \$600?	$\frac{3}{4}\%$ of \$800?	$\frac{4}{5}\%$ of \$2500?

Tell how to express decimally

10.	11.	12.	13.
$\frac{1}{4}$ per cent.	$\frac{1}{3}$ per cent.	$\frac{3}{4}$ per cent.	$\frac{5}{8}$ per cent.
$\frac{1}{2}$ per cent.	$\frac{1}{8}$ per cent.	$\frac{2}{5}$ per cent.	$\frac{2}{3}$ per cent.

**Increase the number**

1.	2.	3.
12 by 50%.	40 by 20%.	35 by $14\frac{2}{7}\%$ .
15 by 20%.	36 by $33\frac{1}{3}\%$ .	80 by 5%.
20 by 10%.	20 by 25%.	45 by 20%.
8 by 25%.	100 by 1%.	28 by 25%.
6 by $33\frac{1}{3}\%$ .	50 by 50%.	70 by 10%.
16 by $12\frac{1}{2}\%$ .	25 by 4%.	27 by $33\frac{1}{3}\%$ .
18 by $16\frac{1}{3}\%$ .	60 by 5%.	30 by $16\frac{2}{3}\%$ .
24 by $8\frac{1}{3}\%$ .	32 by $6\frac{1}{4}\%$ .	64 by $12\frac{1}{2}\%$ .

---

**Decrease the number**

4.	5.	6.
10 by 20%.	15 by $33\frac{1}{3}\%$ .	9 by $66\frac{2}{3}\%$ .
20 by 5%.	25 by 4%.	12 by 75%.
30 by $16\frac{2}{3}\%$ .	36 by 25%.	16 by $12\frac{1}{2}\%$ .
40 by $12\frac{1}{2}\%$ .	48 by $6\frac{1}{4}\%$ .	14 by $14\frac{2}{7}\%$ .
50 by 50%.	56 by $12\frac{1}{2}\%$ .	24 by $16\frac{2}{3}\%$ .
60 by $8\frac{1}{3}\%$ .	72 by 50%.	18 by $33\frac{1}{3}\%$ .
70 by $14\frac{2}{7}\%$ .	84 by $8\frac{1}{3}\%$ .	28 by 25%.
80 by $6\frac{1}{4}\%$ .	96 by $16\frac{2}{3}\%$ .	32 by $6\frac{1}{4}\%$ .

---

**Increase**

7.
\$64 by 25 per cent.
\$48 by $16\frac{2}{3}$ per cent.
\$75 by 12 per cent.
\$36 by $66\frac{2}{3}$ per cent.
\$50 by 6 per cent.

**Decrease**

8.
\$100 by 15 per cent.
\$120 by 50 per cent.
\$250 by 40 per cent.
\$320 by $37\frac{1}{2}$ per cent.
\$500 by 4 per cent.

What per cent is

1.	2.	3.
2 of 4?	1 of 5?	\$ 3 of \$4?
5 of 10?	2 of 10?	\$ 8 of \$12?
3 of 12?	8 of 4?	\$ 9 of \$12?
2 of 6?	2 of 16?	\$ 5 of \$25?
1 of 4?	3 of 21?	\$ 2 of \$3?
9 of 3?	2 of 20?	\$10 of \$4?
15 of 5?	30 of 10?	\$ 3 of \$8?
1 of 2?	10 of 20?	\$15 of \$10?

---

What per cent is

4.	5.	6.
25 of 50?	$33\frac{1}{3}$ of $66\frac{2}{3}$ ?	25 of $62\frac{1}{2}$ ?
$12\frac{1}{2}$ of 25?	$8\frac{1}{3}$ of 50?	50 of 75?
$6\frac{1}{4}$ of $12\frac{1}{2}$ ?	$12\frac{1}{2}$ of $37\frac{1}{2}$ ?	$12\frac{1}{2}$ of $87\frac{1}{2}$ ?
$37\frac{1}{2}$ of 75?	$16\frac{2}{3}$ of $33\frac{1}{3}$ ?	$6\frac{1}{4}$ of 50?
$6\frac{1}{4}$ of 25?	25 of 75?	25 of $87\frac{1}{2}$ ?
$12\frac{1}{2}$ of 50?	50 of $62\frac{1}{2}$ ?	$16\frac{2}{3}$ of $66\frac{2}{3}$ ?
$37\frac{1}{2}$ of 50?	$12\frac{1}{2}$ of $62\frac{1}{2}$ ?	$8\frac{1}{3}$ of 25?
$8\frac{1}{3}$ of $33\frac{1}{3}$ ?	$8\frac{1}{3}$ of $16\frac{2}{3}$ ?	$3\frac{1}{3}$ of 10?

---

Compare

7.

 $\frac{1}{2}$  of 5000 people with  $\frac{1}{2}\%$  of them. $\frac{2}{5}$  of a \$1000 bond with  $\frac{2}{5}\%$  of it. $\frac{1}{4}$  of a ton of coal with  $\frac{1}{4}\%$  of it. $\frac{2}{3}$  of your weight with  $\frac{2}{3}\%$  of it. $\frac{5}{8}$  of our national debt with  $\frac{5}{8}\%$  of it.

What ratio does the first answer bear to the second, in each case?

1. A pint is what per cent of a quart?  
A foot is what per cent of a yard?  
A nickel is what per cent of a quarter?  
A nickel is what per cent of a dime?  
A gill is what per cent of a pint?  
A quart is what per cent of a gallon?  
A cent is what per cent of a dime?  
A cent is what per cent of a nickel?  
A peck is what per cent of a bushel?  
A week is what per cent of a fortnight?
- 

2. What per cent of a gallon is a pint?  
What per cent of a peck is a quart?  
What per cent of a foot is an inch?  
What per cent of a pound is an ounce?  
What per cent of a week is a day?  
What per cent of a year is a month?  
What per cent of a quart is a gill?  
What per cent of a peck is a pint?  
What per cent of a cord is a cord foot?  
What per cent of a decade is a year?
- 

**To the Pupil:** Consult your dictionary or arithmetic if you need help.

3. A dozen is what per cent of a gross?  
A foot is what per cent of a fathom?  
A quarter is what per cent of a year?  
A hundred weight is what per cent of a ton?  
A quire is what per cent of a ream?  
A cubic foot is what per cent of a cord foot?

1. What per cent of a gallon is  
1 qt.? 2 qt.? 3 qt.? 4 qt.? 1 pt.? 3 pt.? 5 pt.?
2. What per cent of a pound is  
8 oz.? 4 oz.? 12 oz.? 1 oz.? 2 oz.? 6 oz.? 16 oz.?
3. What per cent of a peck is  
8 qt.? 4 qt.? 2 qt.? 6 q. ? 1 qt.? 7 qt.? 1 pt.?
4. What per cent of a ton is  
500 lb.? 200 lb.? 1000 lb.? 1500 lb.? 20 lb.? 100 lb.?
5. What per cent of a day is  
16 hr.? 12 hr.? 8 hr.? 6 hr.? 18 hr.? 3 hr.? 9 hr.?
6. What per cent of an hour is  
15 min.? 12 min.? 6 min.? 40 min.? 45 min.? 20 min.?
7. What per cent of a mile is  
160 rd.? 40 rd.? 80 rd.? 240 rd.? 32 rd.? 120 rd.?
8. What per cent of a dozen is  
10 units? 9 units? 8 units? 4 units? 3 units? 2 units?
9. What per cent of a right angle is  
90°? 45°? 30°? 60°? 18°? 15°? 75°? 27°?
10. What per cent of a bushel is  
16 qt.? 8 qt.? 24 qt.? 1 pk.? 3 pk.? 4 pk.?  $\frac{1}{2}$  pk.?
11. What per cent of a month (30 days) is  
10 da.? 6 da.? 15 da.? 20 da.? 3 da.? 5 da.? 24 da.?

## 122 PERCENTAGE AND DENOMINATE NUMBERS

1. 25% of a peck = how many quarts?  
50% of a year = how many months?  
50% of a day = how many hours?  
25% of a quart = how many pints?  
25% of a yard = how many inches?  
75% of a yard = how many inches?  
50% of a pound = how many ounces?  
75% of a foot = how many inches?
  
2. 25% of an acre = how many square rods?  
50% of a circumference = how many degrees?  
75% of a mile = how many rods?  
50% of a leap-year = how many days?  
25% of a ton = how many pounds?  
25% of a square foot = how many square inches?  
75% of an hour = how many minutes?  
75% of a dozen = how many things?
  
3. 50% of a bushel = how many pints?  
50% of a mile = how many feet?  
25% of a cord = how many cubic feet?  
75% of an acre = how many square rods?  
50% of a rt. angle = how many degrees?  
75% of a gallon = how many gills?  
25% of a square mile = how many acres?  
75% of a ream = how many sheets of paper?

1.  $33\frac{1}{3}\%$  of a yard = how many inches?  
 $10\%$  of a minute = how many seconds?  
 $20\%$  of a quarter = how many cents?  
 $12\frac{1}{2}\%$  of a pound = how many ounces?  
 $33\frac{1}{3}\%$  of a dozen = how many units?  
 $12\frac{1}{2}\%$  of a day = how many hours?  
 $16\frac{2}{3}\%$  of a quire = how many sheets?  
 $20\%$  of a score = how many units?
- 

2.  $66\frac{2}{3}\%$  of a foot = how many inches?  
 $37\frac{1}{2}\%$  of a peck = how many quarts?  
 $60\%$  of a dime = how many cents?  
 $62\frac{1}{2}\%$  of a pound = how many ounces?  
 $8\frac{1}{3}\%$  of a dozen = how many units?  
 $40\%$  of an hour = how many minutes?  
 $87\frac{1}{2}\%$  of a day = how many hours?  
 $6\frac{1}{4}\%$  of a pound = how many ounces?
- 

How many inches in

3.  $50\%$  of a yard?  
 $25\%$  of a yard?  
 $75\%$  of a yard?  
 $33\frac{1}{3}\%$  of a yard?  
 $66\frac{2}{3}\%$  of a yard?  
 $8\frac{1}{3}\%$  of a yard?  
 $12\frac{1}{2}\%$  of a yard?  
 $37\frac{1}{2}\%$  of a yard?  
 $62\frac{1}{2}\%$  of a yard?  
 $16\frac{2}{3}\%$  of a yard?

How many square inches in

4.  $50\%$  of a square foot?  
 $25\%$  of a square foot?  
 $75\%$  of a square foot?  
 $33\frac{1}{3}\%$  of a square foot?  
 $66\frac{2}{3}\%$  of a square foot?  
 $16\frac{2}{3}\%$  of a square foot?  
 $8\frac{1}{3}\%$  of a square foot?  
 $12\frac{1}{2}\%$  of a square foot?  
 $37\frac{1}{2}\%$  of a square foot?  
 $62\frac{1}{2}\%$  of a square foot?



1. 28	2. 100	3. 18	4. 150	5. 80	6. 30	7. 100
10	40	9	39	24	72	25
2	8	33	24	40	6	40
36	48	6	36	64	42	5
18	32	21	60	16	18	35
6	24	15	45	32	36	50
50	4	90	12	48	60	10
12	20	30	3	72	48	150
22	44	75	48	8	12	75
30	16	27	66	56	54	60

Name as rapidly as you can

1. 50% of each number in columns 1 and 2.
2. 25% of each number in column 2.
3. 75% of each number in column 2.
4.  $33\frac{1}{3}\%$  of each number in columns 3 and 4.
5.  $66\frac{2}{3}\%$  of each number in column 3.
6.  $66\frac{2}{3}\%$  of each number in column 4.
7.  $12\frac{1}{2}\%$  of each number in column 5.
8.  $37\frac{1}{2}\%$  of each number in column 5.
9.  $62\frac{1}{2}\%$  of each number in column 5.
10.  $87\frac{1}{2}\%$  of each number in column 5.
11.  $16\frac{2}{3}\%$  of each number in column 6.
12.  $83\frac{1}{3}\%$  of each number in column 6.
13. 20% of each number in column 7.
14. 40% of each number in column 7.
15. 60% of each number in column 7.
16. 80% of each number in column 7.

17. What common fractions are the same as these per cents?

10%	25%	$12\frac{1}{2}\%$	$8\frac{1}{3}\%$	$33\frac{1}{3}\%$	75%	$66\frac{2}{3}\%$	60%
$16\frac{2}{3}\%$	$6\frac{1}{4}\%$	40%	$37\frac{1}{2}\%$	50%	$87\frac{1}{2}\%$	20%	$83\frac{1}{3}\%$
30%	5%	80%	4%	70%	100%	$14\frac{2}{7}\%$	90%

Find area and perimeter of

- |                     |                            |
|---------------------|----------------------------|
| 1. A 5-inch square. | 2. A rectangle 5'' by 2''. |
| A 10-inch square.   | A rectangle 3'' by 7''.    |
| A 6-inch square.    | A rectangle 4'' by 10''.   |
| A 9-inch square.    | A rectangle 12'' by 1''.   |
| A 4-inch square.    | A rectangle 8'' by 2''.    |
| A 3-foot square.    | A rectangle 7' by 5'.      |
| A 7-foot square.    | A rectangle 2' by 11'.     |
| A 12-foot square.   | A rectangle 10' by 6'.     |
| An 8-foot square.   | A rectangle 9' by 5'.      |
| An 11-foot square.  | A rectangle 4' by 3'.      |
- 

3. What is the perimeter of

- A rectangle  $6'' \times 4\frac{1}{2}''$ ?
- A rectangle  $2\frac{1}{2}'' \times 4''$ ?
- A rectangle  $8'' \times 1\frac{1}{4}''$ ?
- A rectangle  $9'' \times 2\frac{1}{3}''$ ?
- A rectangle  $10'' \times 5\frac{1}{2}''$ ?
- An oblong  $1' \times \frac{1}{2}'$ ?
- An oblong  $12' \times 15'$ ?
- An oblong  $15' \times 20'$ ?
- An oblong  $20' \times 5'$ ?
- An oblong  $30' \times 2'$ ?

4. What is the area of

- A  $2\frac{1}{2}''$  square?
  - A  $3\frac{1}{3}''$  square?
  - A  $5\frac{1}{2}''$  square?
  - A  $1\frac{1}{4}''$  square?
  - A  $4\frac{1}{2}''$  square?
  - A 20' square?
  - A 30' square?
  - A  $2\frac{1}{4}'$  square?
  - A 10' square?
  - A  $1\frac{1}{2}'$  square?
- 

5. Find perimeter and area of

- A pasture 40 rods square.
- A garden  $30 \times 50$  feet.
- A building lot  $50 \times 100$  feet.
- A playground  $100 \times 200$  feet.
- A park  $25 \times 30$  rods.

## APPENDIX

The few pages which follow are outside the plan of this book, but are inserted for the convenience of teachers who may have need of such material as they contain.

These pages are nine in number :

1. Reading Exercise, Whole Numbers.
2. Reading Exercise, Whole Numbers.
3. Reading Exercise, U. S. Money.
4. Reading Exercise, Roman Numerals.
5. Months and Dates.
6. Ratio, and its Application to Simple Problems.
7. Questions for Leisure Moments.
8. Questions for Leisure Moments.
9. Questions for Leisure Moments.

# READING OF WHOLE NUMBERS

1. 2,303	2. 5,012	3. 48,484	4. 31,527
9,091	2,270	30,103	90,318
8,808	8,008	67,380	66,123
6,590	5,060	23,489	40,831
7,227	9,876	41,707	28,506
2,772	2,100	20,120	75,009
5,099	4,404	11,006	40,040
3,303	5,055	84,090	10,001
8,017	6,600	10,005	56,950
5,110	1,011	70,020	88,020

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5. 207,840	6. 408,123	7. 4,000,000	8. 5,100,004
911,255	73,240	1,720,216	236,600
442,233	81,006	9,008,400	82,503
630,040	428,820	3,000,075	261,599
605,066	60,075	2,633,684	8,084,302
129,129	900,009	5,066,114	62,001
703,004	71,032	8,000,600	777,666
150,015	3,890	4,020,096	5,200,048
400,440	154,400	3,344,000	137,425
860,068	76,000	1,200,005	50,606

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9. 23,640,125	10. 148,000,265	11. 13,605,400
8,347,720	804,012,000	724,100,098
91,100,042	160,006,060	5,000,225
58,000,004	432,593,687	417,069,008
3,374,810	220,000,220	24,403,100
28,136,000	864,102,300	6,000,550
1,012,012	521,000,336	920,109,111
6,700,000	101,612,000	5,005,500
25,025,009	254,369,845	612,018,000
10,100,100	912,814,711	115,230,003

1. 1,001	2. 25,000	3. 105,675	4. 75,204
7,240	10,204	920,043	3,319
4,086	91,900	212,114	600,420
6,955	80,075	303,206	80,307
2,040	30,006	110,770	2,925
5,007	22,401	678,678	405,060
1,313	67,809	602,206	77,440
7,700	56,078	547,000	3,802
3,016	30,456	100,101	745,010
2,212	70,700	980,755	604,288
<hr/>			
5. 82,008	6. 302,050	7. 2,750,933	8. 1,425,869
50,403	510,115	3,861,002	604,133
27,011	708,000	5,409,080	28,002
19,222	601,211	1,000,040	901,090
77,001	991,903	7,032,006	7,706,055
40,020	400,040	6,448,000	4,011
25,025	127,721	1,020,703	723,000
50,250	200,405	4,307,618	5,000,030
16,161	696,807	9,000,750	8,902,007
80,505	110,111	6,300,003	2,601
<hr/>			
9. 35,127,950	10. 734,100,200	11. 3,041,296	
4,000,306	58,000,030	733,155	
209,140,000	163,302,445	49,037,082	
18,018,200	8,346,921	200,000,360	
6,334,002	542,806,009	71,340,809	
20,000,020	70,000,236	4,502,075	
730,035,700	5,024,000	316,402	
2,200,200	621,006	44,389,600	
95,900,554	940,032,065	908,760,543	
105,002,007	7,320,439	27,140	
840,036	24,706	6,645,613	
9,237,540	2,150,430	54,903,027	

1. \$ 8.36	2. \$ 50.00	3. \$751.14	4. \$863.20
51.25	250.00	45.50	20.25
270.04	6.39	332.28	71.00
7.20	40.88	88.40	301.12
80.08	931.27	190.87	5.74
44.21	804.05	345.68	36.95
670.03	22.02	91.12	310.00
9.27	150.16	171.80	65.05
60.20	570.04	6.55	414.80
488.34	39.00	18.42	50.50
<hr/>			
5. \$ 90.99	6. \$ 426.80	7. \$ 1,212.13	8. \$51,502.36
213.67	5,019.05	45,008.50	7,243.68
55.04	100.84	171.12	44,000.00
580.92	2,971.70	8,063.09	2,063.24
6,008.00	4,222.04	75,012.00	751.25
12.50	68.25	2,184.75	2,002.40
345.07	6,120.00	7,007.10	40,321.21
924.36	466.00	640.02	6,780.09
7,000.20	7,280.15	50.09	818.58
66.06	3,000.95	833.27	11,010.04
<hr/>			
9. \$5,208,136.00	10. \$ 543,287.10	11. \$ 302,108.73	
42,020.12	2,040,069.52	99,053.06	
180,181.06	8,221.04	410,111.00	
76,000.40	95,095.16	7,005.02	
2,302,190.75	83,301.20	6,170,000.54	
8,009, 0 10	260 953.88	33,598.11	
78,403.00	5,000,275.00	4,080.08	
590,000.95	705,003.05	7,600,540.20	
3,000,625.70	1,009,008.60	50,050.50	
1,100,000.00	42,000.10	2,800.00	
55,209.38	317,700.25	5,000,439.80	
600,020.08	8,000,025.42	625,012.15	

**NOTE.** Ability to read numbers expressed in the Roman notation is all that should be required of pupils, and but little time should be spent even in reading them.

I = 1. V = 5. X = 10. L = 50. C = 100. D = 500. M = 1000.

1.	2.	3.	4.	5.	6.
I	II	CCC	XII	LXXX	XIV
V	III	VI	XIII	IV	XVI
X	XX	VII	XV	IX	XVII
L	XXX	VIII	LX	XL	XVIII
C	CC	XI	LXX	XC	XIX

---

7.	8.	9.	10.
XXI	XXIV	LV	LXXI
XXXI	XXXII	LXVI	XCIV
XLI	XLIII	LXXVII	LIII
LI	LVIII	LXXXII	XLVII
LXI	LXVII	XXVIII	XXXV
LXXI	LXXIX	XXXIX	LXVIII
LXXXI	LXXXVI	XLIV	XXVI
XCI	XCV	XCIH	LXXXIX

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11.	12.	13.	14.
D	MDCC	DLXIV	MLXVI
M	MDCCC	CDIV	MCCXV
CD	MCM	CCII	MDLXIV
DC	DCX	DLV	MDCXVI
DCC	CDIV	MM	MDCXX
DCCC	DCLXV	MDLXV	MDCCCXII
CM	CCCX	CDL	MCDXCII
MD	CDX	CDXLIV	MDCCCLXXVI
MCD	DXLV	DCLXVI	MCMXIV
MDC	DLXV	ML	MCMXXI

**1. What is the first month of the year?**

The twelfth?	The sixth?	The second?
The eleventh?	The third?	The seventh?
The fifth?	The tenth?	The eighth?
The fourth?	The ninth?	

**2. Which month of the year is**

October?	June?	December?	May?
February?	March?	April?	July?
November?	August?	January?	September?

**3. Memorize these two lines:**

“Thirty days hath September,  
April, June, and November.”

**4. Name the month that has the fewest days. How many days has this month?**

**5. All the months not named above have thirty-one days. Name them.**

**6. On business papers, the month is often expressed by a numeral, and the year abbreviated, thus:**

2/24/05	1/5/18	11/8/20
5/15/12	10/26/14	9/12/10
8/26/09	7/12/15	12/25/17
4/17/11	3/30/16	6/10/21

**7. Express in numerals, as above:**

Oct. 10, 1919	Feb. 22, 1920	Aug. 6, 1920
July 4, 1915	Dec. 18, 1916	Apr. 1, 1918
March 23, 1900	May 7, 1910	June 18, 1921



The ratio of one number to another is the quotient of the first divided by the second.

What is the ratio of

- |                             |                         |
|-----------------------------|-------------------------|
| 1. 20 dollars to 4 dollars? | 2. 21 cents to 7 cents? |
| 40 quarts to 8 quarts?      | 9 yards to 27 yards?    |
| 30 inches to 6 inches?      | 8 acres to 12 acres?    |
| 25 pounds to 75 pounds?     | 6 days to 8 days?       |
| 12 ounces to 48 ounces?     | 9 tons to 12 tons?      |

What is the ratio of

- |                       |                        |
|-----------------------|------------------------|
| 3. An inch to a foot? | 4. A foot to 4 inches? |
| A foot to a yard?     | A pound to 8 ounces    |
| A quart to a gallon?  | A day to 6 hours?      |
| A day to a week?      | An hour to 15 minutes  |
| An ounce to a pound?  | A year to 3 months?    |

What is the ratio of

- |                                   |                                |
|-----------------------------------|--------------------------------|
| 5. 4 ounces to 2 pounds?          | 6. 2 dozen units to 8 units?   |
| 3 pints to 3 quarts?              | 5 years to 10 months?          |
| 5 months to $2\frac{1}{2}$ years? | 4 pecks to 4 quarts?           |
| 6 minutes to half an hour?        | 1 yard to $1\frac{1}{2}$ feet? |

### Application of Ratio

*Pupils should be taught to solve by means of ratio all such problems as the following:*

If 5 quarts of milk cost 80 cents, how much will 10 quarts cost?  
(It is not necessary to find the cost of 1 quart.)

If a man's salary is \$3600 a year, how much does he earn in 4 months? (Do not find salary for 1 month.)

How much will a dozen apples cost at the rate of 3 for ten cents?  
(What is the ratio of 12 to 3?)

**Questions for Leisure Moments**

To pupils: *A study of the following questions, one or two at a time, will give you a small fund of useful information on everyday subjects. The information is to be found in your arithmetic or in the dictionary.*

1. How long is a fortnight? A quarter? A decade?
2. What does bi-weekly mean? Bi-monthly?
3. How many is three-score and ten?
4. Is a quart, liquid measure, just equal to a quart, dry measure? Find out from the facts given here:  
The standard gallon contains 231 cubic inches.  
The standard bushel contains 2150.42 cubic inches.
5. What is the difference in pounds between the long ton and the short ton? Which one is commonly used in the United States? In England?
6. How many gallons does a barrel contain? A hogshead?
7. Give the dimensions of a cord of wood. Into what lengths is the wood sawed?
8. How is lumber sold? What does the abbreviation "M" stand for?
9. How many acres in a square mile?
10. How deep is a fathom?
11. How long is a league? What is this unit of measure used for?
12. In measuring the earth removed in excavations, how much is called a load?

13. How large is a township? A section? Where are these terms chiefly used?

14. How many quires of paper make a ream?

15. How many units make a gross? A great gross?

16. How can the leap years be determined?

17. How much U. S. money is equivalent to the English pound? To the French franc? To the German mark?

18. Is the English penny equal in value to the United States cent? Find out from this table:

12 pence (pennies) make 1 shilling.

20 shillings make 1 pound.

19. Canada is a province of Great Britain. Do Canadians use English money?

20. What is a ten-dollar gold piece called? A twenty-dollar gold piece?

21. Are our gold and silver coins made of the pure metal?

22. Name the coins of the United States, and the metal of which each is made.

23. 18-carat gold is what per cent pure gold? What per cent alloy?

24. What does the word "perimeter" mean?

25. What is the perimeter of a circle called?

26. What relation has the radius of a circle to the diameter? What relation has the diameter to the circumference?

27. We measure distances on land by the English mile. What is the length of this mile in feet?

28. The speed of a vessel is measured in knots, or nautical miles. A nautical mile is how many feet?

29. What is a lunar month? A calendar month? Which is the longer?

30. Explain local time, and standard time. Is it possible for local and standard time to correspond at any place?

31. Which unit of measure is longer, the meter or the yard? How much longer?

32. How was the length of the meter established?

33. In what countries is the Metric System of Weights and Measures commonly used?

34. What is the unit of weight by which diamonds and other precious stones are weighed?

35. What are safe and proper ways of sending money to a person in another city or town?

36. Should money ever be inclosed in a letter?

37. What does the abbreviation "Inc." after the name of a business firm mean?

38. Generally speaking, is it safer to invest money in stocks or in bonds? Why?













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